

STS CONSULTANTS, LTD.

**Completion Report Addendum I
Lakeshore East
221 N. Columbus Drive
Chicago, Illinois**

Lakeshore East LLC
One West Superior, Suite 200
Chicago, Illinois 60610

STS Project No. 1-32193-XC
September 23, 2004

EPA Region 5 Records Ctr.



231489





STS CONSULTANTS

750 Corporate Woods Parkway
Vernon Hills, Illinois 60061
847-279-2500 Phone
847-279-2510 Fax

September 23, 2004

Mr. Fred Micke, On-Scene Coordinator
US Environmental Protection Agency - Region 5
77 W. Jackson Blvd., SE-5J
Chicago, Illinois 60604-3590

RE: Completion Report Addendum I for Lakeshore East Project, 221 N. Columbus Drive, Chicago, Illinois - STS Project No. 1-32193-XC

Dear Mr. Micke:

Enclosed please find three copies of the Addendum to the Completion Report for the removal of radiologically-impacted soil at the Lakeshore East site. Upon receipt of the U.S. Environmental Protection Agency comments we will prepare a final revised report with a signed affidavit.

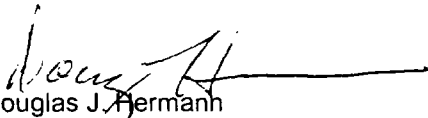
Please contact us with any questions you may have regarding this report or any other aspects of this project.

Sincerely,

STS CONSULTANTS, LTD.



Steven C. Kornder, Ph.D.
Project Manager



Douglas J. Hermann
Principal

Attachment: Completion Report Addendum I



THE INFRASTRUCTURE IMPERATIVE

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US Environmental Protection Agency
STS Project No. 1-32193-XC
September 23, 2004

**COMPLETION REPORT ADDENDUM I
LAKESHORE EAST
221 NORTH COLUMBUS DRIVE
CHICAGO, ILLINOIS**

1.0 INTRODUCTION

1.1 Background

The Completion Report¹ submitted to the USEPA in September 2003 documented radiological surveying and the removal of radiologically-impacted soil identified in the initial investigations and during the grading of fill-soil above the circa 1900 site elevation outside of the former slips. Within the former slip boundaries, radiological surveys of the surface were completed during grubbing (i.e., the removal of vegetation), but the subsurface fill-soil within the former slips was not surveyed in 18-inch lift surveys except in specific infrastructure/construction related project areas. Thus, future activities conducted within the boundaries of the former slips required monitoring for the presence of radiologically-impacted material whenever subsurface materials were disturbed. This Addendum Report (Addendum) provides a summary of the radiologically-impacted soil subsequently identified as the result of radiological monitoring conducted within the former slip boundaries. Specifically, the Addendum documents removal activities performed between March 10, 2003 and June 30, 2004.

The work documented in the Completion Report and the work reported in this Addendum was conducted in response to an Action Memorandum from U.S. Environmental Protection Agency (USEPA), dated July 17, 2002, entitled "Action Memorandum—Determination of Threat to Public Health or the Environment and Need for Time Critical Removal Action at the Family Golf Course/Lake Shore East Site Chicago, Cook County, Chicago, Illinois (Site Spill ID #05YH)". A copy of the Action Memorandum is included in Appendix A of the Completion Report¹. The work for this Addendum was conducted in general accordance with the procedures outlined in the Work Plan for Investigation and Removal of Radiologically Impacted Soil (Work Plan) prepared by STS Consultants, Ltd. (STS) dated June 24, 2002, revised September 13, 2002 and September 30, 2002, and approved by the USEPA in correspondence dated September 30, 2002.

¹ STS (September 19, 2003) Completion Report for Lakeshore East LLC, 221 N. Columbus Drive, Chicago, Illinois.



1.2 Location and Description of Property

The subject site consists of 25.18 acres located at the southwest corner of East Wacker Drive and Lake Shore Drive, at 221 North Columbus Drive in Chicago, Illinois. The site is bounded on the north by East Wacker Drive, currently occupied in part by a City of Chicago auto impound yard at ground level and Wacker Drive on an elevated viaduct. To the east is Lake Shore Drive. The south margin of the site is occupied by several residential high-rise buildings, East Randolph Street and commercial high-rise buildings. The west margin of the site is occupied by North Columbus Drive and commercial buildings.

Proposed development will consist of residential townhouses and high-rise structures, with potential for some commercial development to be included. An approximately six acre city park with an elementary school is planned for the interior portion of the site. City streets are planned for the site surrounding the park and school and providing access to the existing roadways surrounding the site.

1.3 Previous Radiological Surveys and Reports

This Addendum to the Completion Report addresses the removal of soil and fill materials that were found to be impacted with thorium and various radioactive decay progeny. The presence of elevated radioactivity was initially reported by USEPA in correspondence dated July 2, 2001. Subsequent radiological investigations, conducted by STS, have been submitted to and approved by the USEPA with the exception of the Completion Report which is currently undergoing review. The results of these investigations are contained in the following reports:

- Radiation Survey, 26-Acre Site, Southwest Corner Wacker Drive and Lake Shore Drive, 221 N. Columbus Drive, dated September 19, 2001
- Addendum to Report for Results of Expanded Gamma Radiation Survey at 26-Acre Site, 221 North Columbus Drive, dated October 2, 2001
- Test pit Exploration at 26-Acre Golf Course Site, Southwest Corner of Wacker Drive and Lake Shore Drive, Dated January 8, 2002
- Final Report for the Lakeshore East Additional Radiation Survey Investigation, Dated February 8, 2002
- Completion Report for Lakeshore East, Dated September 19, 2003.

2.0 REMOVAL ACTIONS

The first four reports listed in Section 1.3 comprise the initial exploration and survey phase (Phase I) of the radiological work conducted at the site (refer to Appendix E of the Completion Report). The Completion Report documented the removal actions undertaken during two additional investigation and remediation phases (Phases II and III). Phase II included the removal of the radiologically-impacted material identified by the Phase I activities, while Phase III consisted of the surveying of the fill soil above the circa 1900 site elevation outside of the former slips. Specifically, the Phase III work included the surveying of the fill soils in 18-inch lifts, and where necessary, the removal of impacted material. The general site grading (Phase III) was completed on March 7, 2003. Thus, this Addendum documents removal actions associated with radiologically-impacted materials identified as the result of radiological monitoring conducted during construction and infrastructure related activities performed within the former slips between March 10, 2003 and June 30, 2004.

2.1 Site Work Documented Through Monthly Progress Reports

The work completed in the course of this Addendum (March 2003 - June 2004) was documented through monthly progress reports submitted to USEPA. These reports presented the work completed the past month, and described the work planned to be completed in the coming month. The monthly reports also included the analytical results for both personal air monitors (PAMs) and for the high volume perimeter air monitors. The analysis results for the routine soil samples were not included in the monthly reports. The soil analyses for the verification samples were submitted with the request for USEPA sign-off of successful remediation, and therefore were not included with the monthly progress reports. The monthly reports are on file with USEPA and are not included as an attachment in this Addendum.

2.2 Infrastructure Thorium Removal Grid System

To document the removal and monitoring work at the site, a grid system for the site was established using the site construction coordinate system. This 200 by 200 foot grid system was the same as that used to document the work described in the Completion Report (STS, September 2003). The site-wide grid, consisting of partial to complete grids, 1 through 40, was further sub-divided into 100 foot by 100 foot quarters designated A through D, from the northwest quarter clockwise around to the southwest corner. Thus, the southeast quarter of grid 17 would be designated as 17C. Figure 1 presents a drawing of the site which includes the 200 by 200 foot grid system.

2.3 Removal Procedures for Radiologically-Impacted Materials

The cleanup threshold established by USEPA was 5 picoCuries per gram (pCi/g) of total radium (Ra-226 + Ra-228) above the background radium activity. The background total radium activity for the area was specified by USEPA as 2.1 pCi/g. Thus, the cleanup threshold for the site was established at 7.1 pCi/g total radium.

In the course of infrastructure and construction radiological monitoring, gamma readings characteristic of material exceeding the cleanup threshold were occasionally encountered. Initial actions included establishment of an exclusion zone at each of the elevated reading locations and notification of USEPA. The exclusion zones were marked with paint, and magenta and yellow radiation zone rope was used to delineate the perimeters. Entry into exclusion zones was limited to persons in proper personal protective equipment (PPE), in accordance with the Work Plan and Health and Safety Plan (STS, September 2002).

At each of the exclusion zones the radiologically-impacted material was removed to apparently clean limits by loading the material directly in shipping containers. Upon reaching the apparently clean limits, a "pre-EPA survey and sampling" was conducted by STS to show that the area met the cleanup standard. Each survey area was limited in size to an area no greater 100 square meters. After completion of the "pre-EPA" survey, the USEPA was notified and mobilized to the site to conduct a verification survey of the exclusion zone. The USEPA survey areas were the same as those sampled as part of the "pre-EPA" survey sampling effort.

For the verification surveys, five samples were collected from the each of the four quarters and center of the area and combined to form a single composite sample. In accordance with the Work Plan² SOP-223 (Verification Survey), the composite sample was homogenized by mixing the soil in a clean steel bowl, screened to minus ¼-inch, and five sub-samples were generated for radiological analysis. If the average of these five sub-samples was found to be less than the cleanup threshold of 7.1 pCi/g total radium, a notice of successful verification form was prepared for USEPA signature. The supporting analytical data and verification form were faxed to USEPA. After receipt and review, the USEPA signed the form and returned a faxed copy to STS, thus releasing the area for backfilling. Copies of the signed successful verification forms are provided in Appendix A.

2.3.1 North Field Drive

Construction and/or infrastructure related monitoring activities commenced on March 10, 2003 following the completion of the lift survey phase (Phase III). Initial activities involved the excavation of soil within

² STS (revised September 30, 2002) Work Plan for Investigation and Removal of Radiologically Impacted Soil, Lakeshore East LLC, 221 N. Columbus Drive, Chicago, Illinois.

the former northern slip to establish the grades necessary for future roadway development. The excavation focused primarily on the former northern slip areas within grids 9 through 11 (refer to Figure 1). Excavations proceeded in 18-inch lifts and were surveyed for elevated gamma radiation as the excavation proceeded. The soil was screened by personnel from Stan. A. Huber, Inc. (Huber) using a Ludlum 2221 meter and 2 x 2 NaI probe. The USEPA was notified via telephone on March 11, 2003 of the initial discovery of elevated gamma readings during excavation within grid 9 of the former north slip. Additionally, elevated gamma readings were observed during the excavation of a test pit in the northwest corner of grid 36 on March 24, 2003.

Excavation of the radiologically-impacted soil was initiated the week of March 24, 2003 and was completed on April 10, 2003. A total of 45 containers ("Baker boxes") of material were loaded during this removal action. Areas of excavation included the identified exclusion zones in the grids 9 through 11 and 36. Area air monitoring and personal monitoring were conducted during the remediation activities and are provided in Appendix E. No exceedances of the allowable limits for personal or area air monitoring were observed. Verification surveys were completed by the USEPA for the areas between March 27 and April 11, 2003. The grid location and date the notice of successful verification was signed by the USEPA are provided in Table 1.

Table 1
North Field Drive Grading
Notice of Successful Verification

Survey Grid Designation	USEPA Signature Date
9A#1	4/2/2003
9A#2	4/2/2003
9B	4/2/2003
9D/9C NE	4/15/2003
9D/9C SE	4/15/2003
9D/9C NW	4/15/2003
9D/9C SW	4/15/2003
10D#2	4/15/2003
11C#1	4/16/2003
11C#2	4/16/2003
11D	4/16/2003
10C	4/16/2003
10D#1	4/16/2003
9C	4/16/2003
10D#3	4/16/2003

Note: Each 200 by 200 foot grid is divided into four quadrants denoted with letters starting with the northwest corner (A) and proceeding in a clockwise direction (i.e., 9A, 9B, 9C and 9D).

2.3.2 Utility Installations

On June 16, 2003, monitoring recommenced for the installation of a sewer line in the former southern slip. On June 17 an area with elevated gamma readings was observed in a section of trench in grid 28C (i.e., southwest corner of grid 28). The area was designated an exclusion zone and the USEPA was notified. Excavation of the area commenced on June 18 and was completed on June 19, 2003. Two additional areas with elevated gamma readings were observed during monitoring in the former north slip (grid areas 9C and 10D) on June 26 and 27, 2003. Following USEPA notification, excavation of these areas was initiated on June 26 and completed on July 2, 2003.

High volume area air monitoring and personal monitoring were conducted during the handling of the impacted materials (refer to Appendix E). No exceedances of the allowable limits for personal or area air monitoring were observed. Verification surveys were completed by the USEPA for the areas on June 20 and July 10, 2003. The grid location and date the notice of successful verification was signed by the USEPA are provided in Table 2.

Table 2
Utility Installation
Notice of Successful Verification

Survey Grid Designation	USEPA Signature Date
C-218-73 (28C)	6/20/2003
C-201-31-#1 (9C)	7/10/2003
C-201-31-#2 (10D)	7/10/2003

2.3.3 Caisson and Wick Drain Monitoring - North Field Boulevard

In early July 2003 the installation of caissons for North Field Boulevard area was initiated in the southern portion of the site (grid areas 27 and 36). At several of the planned locations the caissons completely penetrated the fill materials in southern slip (Slip E) and extended into the native soil below. Monitoring of the spoil materials generated during the drilling of caissons in the slip fill materials was required since the subsurface materials within the slips had not been surveyed in 18-inch lifts prior to the construction project phases. Thus, the spoil from the caisson augers drilled in the former shipping slips was field screened as the soils were brought to the surface. The soil was screened by personnel from Huber using a Ludlum 2221 meter and 2 x 2 NaI probe. No readings were observed that would indicate contamination levels above the cleanup criteria of 7.1 pCi/g total radium.

Concurrent to the caisson installation, wick drains were installed to aid in the consolidation of the soil fill material within the former southern slip area. The wick drains were installed in the western section of the

southern slip, which occupies portions of grids 26 through 29 and 35 through 38 (refer to Figure 1). The installation of wick drains in the southern slip utilized a small diameter 30-foot boring and resulted in the generation of less than 1 cubic foot of spoil material per wick drain. The spoil was screened by personnel from Huber using a Ludlum 2221 meter and 2 x 2 NaI probe. Field survey personnel (Huber) observed a gamma reading of 27,000 counts per minute (cpm) in the spoil at one of the wick drains during the installation on July 28, 2003. This observed reading was slightly above the Ludlum/instrument specific cutoff value of 20,352 cpm, which was based on the USEPA cleanup level of 7.1 pCi/g total radium. The spoil material was observed to contain ash and brick fragments.

Figure 1 shows the position of the drain as 174 feet (ft.) west of the property line along Harbor Drive and 109 ft. north of the southern property line along 400 East Randolph. The soil/spoil material with the elevated gamma readings was placed in a plastic bag. The ground surface area was then surveyed and determined to be consistent with background gamma levels. The bagged material was disposed with other radiologically-impacted material from the site. Spoil material generated at the surrounding series of drains installed about 5 feet away exhibited no evidence of elevated gamma readings. In fact, elevated gamma readings were not observed in the spoil of the other wick drains (over 1400) installed within the southern slip. Thus, the impacted material with elevated readings appeared to be isolated and potentially associated with the brick fragments.

The wick drain at which the elevated readings were observed is located within the proposed park drive right-of-way. The elevation of the surface at the drain is approximately 7 ft. Chicago City Datum (CCD). However, the final elevation for the roadway is proposed to be 23.9 ft. CCD. Thus, the existing surface will be covered with about 17 feet of additional fill soil that will essentially preclude the potential for future exposure. A call was placed to Mr. Fred Micke (USEPA) to discuss the investigation of the wick-drain in detail on August 5, 2003 (refer to confirming letter included in Appendix B). As discussed with the USEPA, it is unclear whether the slightly elevated readings were attributable to the presence of the brick material. In the call, the USEPA and STS agreed that additional investigation/removal activities were not warranted given the absence of elevated readings at the surface, the planned placement of additional fill soils, the short distance to the watertable, the isolated nature of the impacted material (based on the survey of surrounding spoil piles) and difficulties in conducting excavation activities within the newly stalled wick drain field.

2.3.4 North Slip Grading, Utility Installation and Construction Monitoring

Three areas with slightly elevated gamma reading (see grid 12 on Figure 1) were identified in the eastern portion of the former northern slip during general grading activities in the vicinity of a water utility installation on August 15, 2003. These areas were setup as exclusion zones 12C#1, 12C#2 and 12C#3.

The areas were designated as exclusion zones and the USEPA was notified of the discovery and intention to remediate. Equipment was mobilized to initiate the remedial activities on August 20, 2003. The remedial work was completed on August 25, 2003. Verification surveys for the remediated exclusion zones were performed by the USEPA contractor on August 27 and notices of successful verification were signed by the USEPA on August 29, 2003.

Table 3
North Slip and Utility Installation
Notice of Successful Verification

Survey Grid Designation	USEPA Signature Date
12C-#1	8/29/2003
12C-#2	8/29/2003
12C-#3	8/29/2003

During October 2003, radiological surveying was conducted during grading activities and at the locations of proposed caisson installations for the Shoreham construction project (Parcel G) within the former northern slip. Evidence of elevated gamma readings was observed at several small areas located in grid 13 located at the eastern end of the north slip on October 9, 2003. The areas were designated as exclusion zones 13D East, 13D West and Caisson C.2-3.

On October 29, 2003, remediation was initiated for the areas identified on October 9, 2003. The areas were designated as exclusion zones 13D East, 13D West and Caisson C.2-3. Remedial activities were conducted on October 29 - 31 and on November 7. Personal and area air monitoring conducted during the excavation of radiologically-impacted soil in October and on November 7, 2003 indicated no exceedances of the allowable limits (Appendix E). The location and date the notice of successful verification was signed by the USEPA are provided in Table 4.

Table 4
Caisson and Utility Installation
Notice of Successful Verification

Survey Grid Designation	USEPA Signature Date
13D East	11/12/2003
13D West	11/13/2003
Cassion C.2.3 (9C)	11/14/2003

2.3.5 Tee Box Area and Golf Course Pond Surveys

The initial investigation phase, Phase I, consisted of a 5-meter grid surface survey of the 26 acre Lakeshore East site (STS, September 19, 2001 and October 2, 2001). In reviewing the data for this report, two areas were found to not be covered by the 5-meter grid survey. The two areas include an

area just east of the tee box at the western end of the driving range where water was ponded during the initial survey and the golf course pond. Each of these areas is identified on Figure 2. As discussed in the Completion Report (STS September 2003), these areas are located outside of the former slip areas and at elevations that do not require 18-inch lift excavations (i.e., surface elevation below the 1900 site elevation). Thus, based on discussion with the USEPA, the Completion Report indicated that the radiological survey of the surface would be completed at each area following the removal of or draining of the water.

The 75 by 100 foot area just east of the tee box formerly covered with water was surveyed on October 1, 2003, when no standing water was present. The surface soil was screened by Huber personnel using a Ludlum 2221 meter and 2 x 2 NaI probe using the site-wide grid system according to the site grading survey procedures outlined in SOP-210 of the approved Work Plan (STS, September 2001). According to SOP-210, the area was traversed and the maximum reading observed in each 50 by 50 foot quadrant recorded. Field survey personnel (Huber) did not observe elevated gamma reading indicative of a radiological impact during the surveying. None of the readings exceeded twice background and the maximum reading observed in a 50 by 50 foot grid quadrant was 14,300 cpm. This maximum value was well below the Ludlum/instrument specific action level of 21,072 cpm, which was based on the USEPA cleanup level of 7.1 pCi/g total radium.

The golf course pond occupied an area approximately 200 by 350 feet located in the northwestern portion of the site (see Figure 2). A radiological survey of the surface sediment/soil of the former pond area was performed by personnel from Huber according to SOP-210 on December 8 and 16, 2003. The maximum reading observed in a 50 by 50 foot quadrant was 11,800 cpm. This value is well below the action level based on the USEPA cleanup level of 7.1 pCi/g total radium. Thus, no evidence of radiologically-impacted soil was observed in the sediment/soil within the footprint of the former golf course pond.

3.0 QUANTITIES OF RADIOLOGICALLY-IMPACTED SOIL REMOVED

A total of 49 containers, each containing approximately 15 cubic yards, of radiologically-impacted soil were removed from the Lakeshore East project site during the infrastructure and construction remediation conducted within the former slip areas between March 10, 2003 and June 30, 2004. The weight of the radiologically-impacted soil is estimated to be about 20.5 tons per container based on weights measured during previous removal efforts. Therefore, a total weight of 1006 tons was shipped during the infrastructure/construction monitoring phase. The material was transported to EnviroCare of Utah for disposal. Table 5 provides a summary of the remediation events and the number of containers of material excavated. Copies of the manifests for the containers of radiologically-impacted soil are provided in Appendix H.

Table 5
Quantity of Radiologically-Impacted Material Removed

Date	Infrastructure Activity	Location	Containers Loaded	Cumulative Project Total	Manifest Nos.
Pre-March 10, 2003*	-	-	-	205	Pre-65902405
April 1 – 10, 2003	North Field Drive Grading/Utility	Grids 9 – 11	17	222	65902405 - 65902421
June 16 – July 2, 2003	Utility Installation	Grids 9, 10 and 28	8	230	65902422 - 65902429
August 20 – 25, 2003	North Slip Grading	Grid 12	10	240	65902430 - 65902439
October 29 – November 7, 2003	North Slip Grading & Caisson Installation	Grids 9 and 13	14	254	65902440 - 65902453

Notes: * - Completion Report remediation totals for Phase II and Phase III.

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4.0 MATERIAL POTENTIALLY REMAINING ON-SITE

4.1 Southern Slip Wick-drain Area

In accordance with the Work Plan, the objective of the project was to remove material identified as radiologically-impacted where feasible. In early July, wick drains were installed to aid in the consolidation of the fill materials within the former southern slip. The installation of wick drains resulted in the generation of less than 1 cubic foot (ft³) of spoil material per wick drain. Field survey personnel from Huber observed an elevated gamma reading of 27,000 cpm (versus a Ludlum/instrument specific cutoff value of 20,352 cpm based on the USEPA cleanup level of 7.1 pCi/g total radium) in the spoil at one of the wick drains on July 28, 2003. Figure 1 shows the position of the drain as 174 ft. west of the property line along Harbor Drive and 109 ft. north of the southern property line along 400 East Randolph.

The soil/spoil material with the elevated gamma readings was placed in a plastic bag. The ground surface area was then surveyed and determined to be consistent with background gamma levels. The bagged material was placed with other radiologically-impacted material from the site for disposal. Spoil material generated at the surrounding series of drains installed about 5 feet away exhibited no evidence of elevated gamma readings. In fact, elevated gamma readings were not observed in the spoil of the over 1400 other wick drains installed within the southern slip. The spoil material at the wick drain contained ash and brick fragments which were thought to be a possible contributor to the slightly elevated readings. Thus, the impacted material with slightly elevated readings appeared to be isolated and potentially associated with the brick fragment debris.

The wick drain at which the elevated readings were observed is located within the proposed park drive right-of-way. The elevation of the surface at the drain is approximately 7 ft. CCD. The final elevation for the roadway is proposed to be 23.9 ft. CCD. Thus, the existing surface will be covered with about 17 feet of additional fill soil that will essentially preclude the potential for future exposure. A call was placed to Mr. Fred Micke (USEPA) to discuss the investigation of the wick-drain issue in detail on August 5, 2003 (refer to confirming letter included in Appendix B). As discussed with the USEPA, it is unclear whether the slightly elevated readings were attributable to the presence of the brick material. In the call the USEPA and STS agreed that additional investigation/removal activities were not warranted given the absence of elevated readings at the surface, the planned placement of an additional thick layer of fill soil, the short distance to the watertable, the isolated nature of the impacted material (based on the survey of surrounding spoil piles) and difficulties in conducting excavation activities within the newly stalled wick drain field. However, USEPA did request that a notice be included within the deed for the parcel on which the potentially impacted soil will remain.

5.0 DIFFICULTIES ENCOUNTERED

No significant difficulties were encountered during the surveying or remediation of radiologically-impacted during the infrastructure phase of the project. The only site related issue that required discussion with the USEPA was the observation of elevated gamma readings within the soil at one wick drain. As discussed in Section 4.1, it was unclear whether the slightly elevated readings were attributable to the presence of the brick material. The wick-drain issue was discussed in detail in a telephone call with Mr. Fred Micke (USEPA) on August 5, 2003 (refer to confirming letter included in Appendix B). STS and the USEPA agreed that additional investigation/removal activities were not warranted given the absence of elevated readings at the surface, the absence of elevated readings at adjacent borings (about 5 feet away), the short distance to the watertable, difficulties in conducting excavation activities within the newly stalled wick drain field, and the planned placement of approximately 17 feet of clean fill soil over the wick drain area.

6.0 ANALYTICAL RESULTS

6.1 Soil Sample Radiological Analytical Results

Soil samples collected during the remediation process were analyzed by Stan A. Huber, Inc. (Huber) at an onsite laboratory by NUTRANL analysis to document the concentrations of the target cleanup radionuclides in the material being excavated. The NUTRANL analyses for the samples are presented in Appendix C by laboratory number, which is also equivalent to chronological order.

6.1.1 Pre-Verification Sample

The process of verification of remediation of the exclusion zone involved the collection and analysis of pre-verification samples to confirm that the removal had achieved the required cleanup levels. The impacted area (exclusion zone) was divided into sections as the area was remediated via the removal of the impacted soil. The exclusion zone was surveyed in areas not exceeding 100 square meters. The pre-EPA survey and sampling areas (i.e., pre-verification sample areas) were selected by the Field Team Leader (STS) and the Health Physics subcontractor (Huber). The USEPA was notified if the results of the pre-verification samples indicated the area met the cleanup standard. Thereafter, the USEPA mobilized to the site and conducted a verification survey of each respective area. The results of the pre-verification samples are listed in Appendix C.

6.1.2 USEPA Verification Samples

The USEPA verification areas were the same as the pre-EPA survey and sampling areas (i.e., pre-verification sample areas). USEPA conducted verification surveys and collected verification samples for the exclusion zones. In each exclusion area five samples were collected to create a composite for that area (i.e., one sample from each of the four quarters and a fifth from the center). The five samples forming the composite were then homogenized (mixed in a clean steel bowl) and five sub-samples were prepared. If the average of these five sub-samples was found to be less than the cleanup threshold of 7.1 pCi/g total radium, a successful verification form was prepared for USEPA signature. The supporting data and form were faxed to USEPA. Upon receipt of the signed form, the area was released for backfilling.

The NUTRANL results of the USEPA verification samples are included with copies of the signed notification of successful verification forms in Appendix A. These same samples were transferred to

USEPA under chain-of-custody for analysis at its contract laboratory. Those data will be included in Appendix D upon completion of the analysis and receipt of the data from USEPA.

6.2 Off-Site Laboratory Gamma Spectroscopy Results

Off-site laboratory analyses were periodically conducted to document the level of radiological-impact present in the soil. Three samples were collected from impacted soils within the exclusion zones and provided to RSSI of Morton Grove, Illinois. The analyses were performed by high resolution gamma spectroscopy and used the 71% Gamma Fraction Limit and 1.2 Library Energy Tolerance in accordance with USEPA specifications. The analysis results indicated total radium levels between 78.6 and 232.2 pCi/g. Copies of the analysis reports are included in Appendix C.

6.3 Imported Soil Samples

In accordance with the Work Plan, imported soil was to be subject to radiological analysis. Analyses were to be conducted at a minimum on each 10,000 cubic yards imported or for each separate source of borrow. Two borrow soil stockpile sample analyses were conducted during the reporting period covered by this Addendum. The analyses were conducted in July and October of 2003 and both indicated results well below the cleanup criteria of 7.1 pCi/g total radium. The radiological analyses for the material are provided in Appendix C.

6.4 Air Monitoring Analytical Results

6.4.1 Site Perimeter Air Monitoring

Perimeter air monitoring for airborne radioactivity was required whenever excavation of radiologically impacted material was being conducted. The Lakeshore East site is sufficiently large that the monitoring of the site perimeter would not characterize the potential airborne contaminants from work at discrete locations within the site. Therefore, air monitoring locations were established at the perimeters of the excavation areas. Thus, the widespread distribution of the exclusion zones activities necessitated that area air monitoring equipment be repositioned for each excavation to comply with the air monitoring plan.

The air samples were analyzed the day after the collection and again after four days to allow for the short-lived progeny to decay. The daily and weekly air concentrations were compared to the most limiting effluent concentration limit for thorium-232, which is $4E-15$ $\mu\text{Ci/ml}$ based on 10 CFR 20 Appendix B Table

2 (Effluent Concentration Limits). No exceedances of the exposure limit for the site perimeter were documented for any day of monitoring. Perimeter air monitoring results are provided in Appendix E.

6.4.2 Personal Air Monitoring

Personal air monitoring (PAM) was conducted for persons working in exclusion zones and those persons involved in the directing of the loading of material into shipping containers. PAM data for radioactivity for both one-day and four-day analyses are included in Appendix E. These data show no exceedances of the allowable exposure limits for this project.

6.5 Personnel Radiation Badge Results

Personnel on site for extended periods during removal operations, and particularly personnel operating in the exclusion zones conducting gamma surveys or sampling, personnel assisting with the loading of the containers, and other persons potentially in contact with radiologically-impacted material were monitored with Optically Stimulated Luminescence (OSL) film badges throughout the Phase II and Phase III activities. Badges were replaced each calendar month. The analysis results for the final set of badges used during the Phasing III removal actions and the initial infrastructure surveys is included in Appendix G. No exceedances of the allowable exposures were measured for personnel as reported in Appendix G or the prior reports submitted in the Completion Report (Appendix M).

The removal actions undertaken during the infrastructure/construction phase of the project were short term in duration. Instead of issuing project specific film badges, the exclusion zone/survey personnel from Huber wore their badges which had been issued by their employer (Stan. A. Huber, Inc.). No exceedances of the allowable exposures were reportedly measured for these personnel.

6.6 Equipment Release Surveys

Excavating equipment used in the excavation of radiologically-impacted soil was required to be surveyed to confirm they were free of radiological impacts prior to being released from the site. This equipment was limited to the excavation buckets used to excavate and load the impacted material. The remainder of the excavator equipment was not used within the exclusion zones. To confirm the absence of impacts the treads and other portions of the equipment where soil had accumulated were surveyed for contamination.

For the excavator buckets, wipes were also taken in accordance with STS SOP 345, and alpha counts were made to confirm the absence of contamination. Limits listed in SOP 345 are currently those of 32 IAC 340 Appendix A (33 dpm/100 cm²). However, in practice with "as low as reasonably achievable" (ALARA), the most restrictive federal level of 20 dpm/100 cm² for removable contamination from Table 1 of the Nuclear Regulatory Commission's Regulatory Guide 1.86 was used for equipment release. A copy of the alpha count survey results were well below this most restrictive level and are included in Appendix F.

7.0 SUMMARY AND CONCLUSIONS

The work documented in the Completion Report and in this Addendum was conducted in response to an Action Memorandum from U.S. Environmental Protection Agency (USEPA), dated July 17, 2002, entitled "Action Memorandum—Determination of Threat to Public Health or the Environment and Need for Time Critical Removal Action at the Family Golf Course/Lake Shore East Site Chicago, Cook County, Chicago, Illinois (Site Spill ID #05YH)". The Phase II and III work was documented in a Completion Report submitted to the USEPA (STS, September 2003). The work described in the Completion Report and this Addendum was also conducted in accordance with the procedures outlined in the Work Plan for Investigation and Removal of Radiologically Impacted Soil (Work Plan) prepared by STS Consultants, Ltd. (STS) dated June 24, 2002, revised September 13, 2002 and September 30, 2002, and approved by the USEPA in correspondence dated September 30, 2002.

The depth of former slips, and subsequent presence of fill-soil below the water table, precluded the comprehensive radiological surveying of the fill-soil within the slip areas. Thus, future excavation that may disrupt historical fill within the former slips requires radiation monitoring of the excavation and appropriate management of any impacted soil encountered. This Addendum provides a summary of the remediation of radiologically-impacted soil subsequently identified as the result of radiological monitoring conducted within the former slip boundaries during infrastructure and construction activities. Specifically, this Addendum documents the removal actions performed between March 10, 2003 and June 30, 2004. The work described in this report includes obtaining verification sign-off from USEPA for surveys of all of the areas at the site where radiologically-impacted soil were remediated.

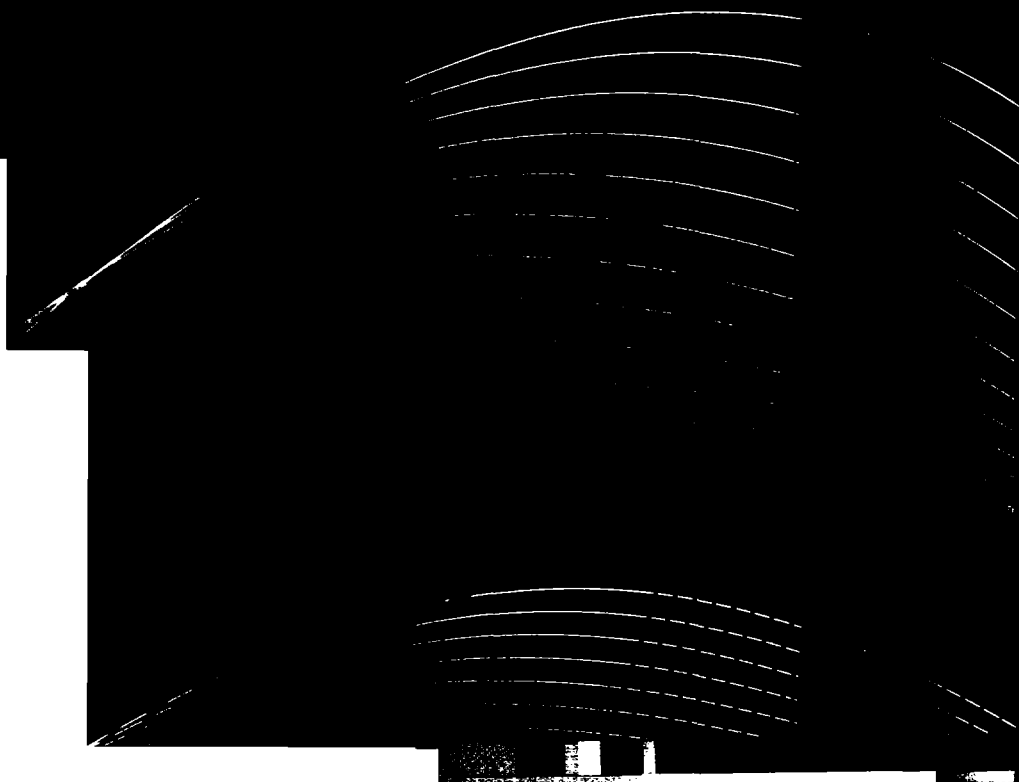
The Addendum also summarizes the observations and subsequent discussions with the USEPA regarding a small volume (1 ft³) of spoil material generated during the installation of a wick drain in the southern slip that was observed to have a slightly elevated gamma reading. The impacted material appeared to be isolated and potentially associated with the brick fragment debris in that spoil. Surface readings and the spoil materials at over 1400 other wick drains, including those installed about 5 feet away, exhibited no evidence of elevated gamma readings. Thus, the USEPA agreed based on the available information (refer to Section 4.1) that additional investigation and/or removal activities were not warranted at this location.

Finally, the Addendum includes the surface soil survey results conducted in the former area of ponded water east of the tee box and the former golf course pond as requested by the USEPA. These surveys did not observe elevated gamma readings indicative of radiologically-impacts.

In conclusion, this Addendum and the work described herein, meets the work requirements of the July 17, 2002, Action Memorandum. Radiological surveying continues to be conducted when infrastructure or construction activities result in the disturbance of subsurface soil and/or fill within the former slip areas. Each of the radiologically-impacted areas identified during the period covered by this Addendum (March 2003 through June 2004) have been remediated and signed-off by the USEPA. Based on discussions regarding the site specific conditions at the one wick drain location, the USEPA agreed that further investigation was not warranted. As a result, STS Consultants (STS), Project Coordinator for this removal action, on behalf of Lakeshore East, LLC, requests written approval by the USEPA of the Addendum.



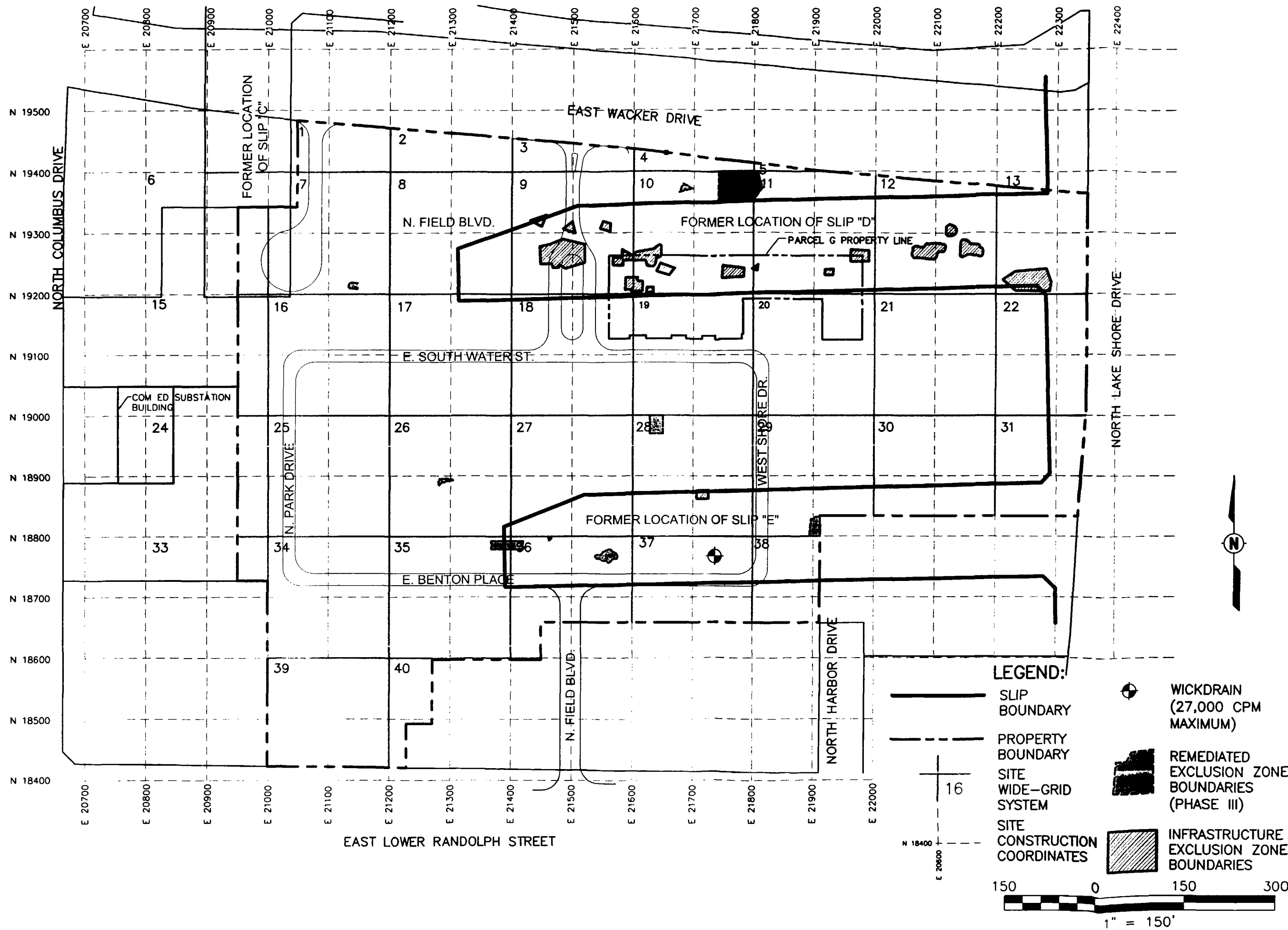
THE INFRASTRUCTURE IMPERATIVE



Figures



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EXCLUSION ZONE LIMITS REMEDIATED
DURING PHASE III AND INFRASTRUCTURE SURVEYS
LAKESHORE EAST LLC
221 NORTH COLUMBUS DRIVE
CHICAGO, ILLINOIS

Drawn: RNB 08/18/2004

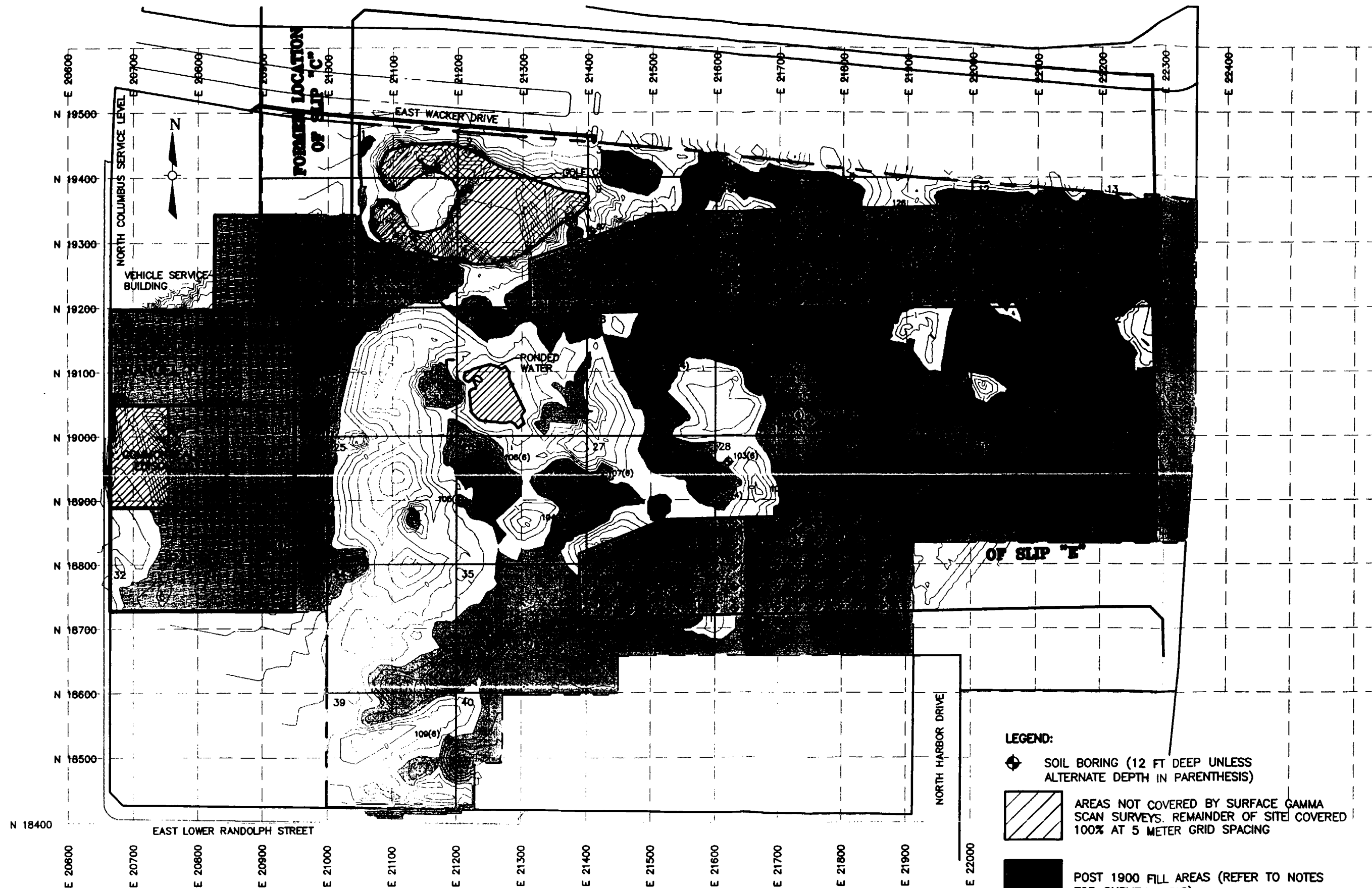
Checked: SCK 08/18/2004

Approved: CSR 08/18/2004

PROJECT NUMBER 132193XC

FIGURE NUMBER 1

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RADIOLOGICAL SURVEY SHOWING 18 INCH LIFTS, DOWN HOLE BORINGS, AREAS NOT COVERED BY WALKOVER SURVEY SUBDIVIDED PARCELS, AND FORMER SLIP LOCATIONS LAKESHORE EAST GOLF COURSE
221 N. COLUMBUS DRIVE
CHICAGO, ILLINOIS

Drawn: RNB 08/19/2004

Checked: SCK 08/19/2004

Approved: CSR 08/19/2004

PROJECT NUMBER 132193XC

FIGURE NUMBER 2



THE
INFRASTRUCTURE
IMPERATIVE





A



THE INFRASTRUCTURE IMPERATIVE



APPENDIX A

USEPA Signed Notification of Successful Verification Sampling Forms

**Infrastructure Remediation
Notice of Successful Verification Summary
Lakeshore East LLC**

Location	Survey Grid Designation	USEPA Signature Date
Infrastructure Excavations	9A#1	4/2/2003
	9A#2	4/2/2003
	9B	4/2/2003
	9D/9C NE	4/15/2003
	9D/9C SE	4/15/2003
	9D/9C NW	4/15/2003
	9D/9C SW	4/15/2003
	10D#2	4/15/2003
	11C#1	4/16/2003
	11C#2	4/16/2003
	11D	4/16/2003
	10C	4/16/2003
	10D#1	4/16/2003
	9C	4/16/2003
	10D#3	4/16/2003
	C-218-73	6/20/2003
	C-201-31-#1	7/10/2003
	C-201-31-#2	7/10/2003
	12C-#1	8/29/2003
	12C-#2	8/29/2003
	12C-#3	8/29/2003
	13D East	11/12/2003
	13D West	11/13/2003
	Cassion C.2.3	11/14/2003

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEYArea Identification: Section 9A #1Date of Verification Survey: 3-27-03Time of Verification Survey 9:00 Am am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.


Signed:

 Date 3-27-03John Anderson (Print Name)Field Team Leader (Print Title)STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on April 2, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavator

Signed:

 Date 4/2/03FREDRICK A. MICKE (Print Name)ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for March 27, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
691	3/27/2003	EPA	S2482 9A#1 EPA#1	26.7	3.6	2.22	1.25	0.59	1.55	0.83	2.8	1.018331969
692	3/27/2003	EPA	S2483 9A#1 EPA#2	23.4	-0.3	2.76	1.89	0.74	1.49	1.06	3.38	1.292749009
693	3/27/2003	EPA	S2484 9A#1 EPA#3	24.6	6.3	2.32	1	0.61	2.62	0.88	3.62	1.070747403
694	3/27/2003	EPA	S2485 9A#1 EPA#4	25.3	3.35	2.55	1.61	0.68	0.6	0.96	2.21	1.176435294
695	3/27/2003	EPA	S2486 9A#1 EPA#5	24.6	-0.59	2.46	1.74	0.67	1.09	0.94	2.83	1.154339638
Average Total Radium (Th-232+Ra-226) Concentration for : 9A#1 2.97 pCi/g												

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: SECTION 9A #2

Date of Verification Survey: 3-27-03

Time of Verification Survey 9:00 am am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

[Signature] Date 3-27-03

John Anderson (Print Name)

Field Team Leader (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on April 2, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 4/2/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for March 27, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
696	3/27/2003	EPA	S2487 9A#2 EPA#1	23.7	3.01	2.26	0.78	0.6	0.79	0.86	1.57	1.048618138
697	3/27/2003	EPA	S2488 9A#2 EPA#2	25.6	5.58	1.65	0.38	0.43	1.39	0.62	1.77	0.754519715
698	3/27/2003	EPA	S2489 9A#2 EPA#3	24.7	0.31	1.62	1.43	0.44	0.68	0.62	2.11	0.760263112
699	3/27/2003	EPA	S2490 9A#2 EPA#4	22.5	0.63	2.26	1.14	0.62	1.63	0.88	2.77	1.076475731
700	3/27/2003	EPA	S2491 9A#2 EPA#5	24.6	0	2	0.62	0.54	2.07	0.78	2.69	0.948683298
Average Total Radium (Th-232+Ra-226) Concentration for :					9A#2		2.18		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEYArea Identification: SECTION 9BDate of Verification Survey: 3-27-03Time of Verification Survey 9:00 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

John AndersonDate 3-27-03

(Print Name)

FIELD TEAM LEADER

(Print Title)

STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on April 2, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. MickeDate 4/8/03FREDRICK A. MICKE

(Print Name)

ON-SCENE COORDINATOR

(Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for March 27, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
701	3/27/2003	EPA	S2492 9B EPA#1	26.5	4.25	2.18	2.01	0.58	1.58	0.8	3.59	0.988129546
702	3/27/2003	EPA	S2493 9B EPA#2	27.4	6.08	2.6	-0.07	0.68	4.45	1.01	4.38	1.217579566
703	3/27/2003	EPA	S2494 9B EPA#3	26.8	1.18	1.91	1.73	0.51	1.76	0.73	3.49	0.890505474
704	3/27/2003	EPA	S2495 9B EPA#4	27.5	1.46	2.48	2.5	0.67	1.02	0.92	3.52	1.138112472
705	3/27/2003	EPA	S2496 9B EPA#5	26.7	1.27	2.61	2.22	0.7	1.1	0.98	3.32	1.204325537
Average Total Radium (Th-232+Ra-226) Concentration for :					9B		3.66		pCi/g			

APR-15-2003 14:25 FROM:USEPA REGION 5
04/11/2003 13:54 FAX 847 2792535312 353 9176
SIS CONSULTANTS

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P.5/5
*****FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: Lakeshore East 90/9c NE
Date of Verification Survey: Apr. 11, 2003
Time of Verification Survey 10:00 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggreen
Date Apr. 11, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STG Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 15, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 15, 2003
Print Name FREDRICK A. MICKE
Print Title ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Mucke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
784	4/11/2003	EPA	S2559 9D/9C NE EPA#1	26.7	1.64	3.4	1.53	0.9	0.08	1.26	1.61	1.548418548
785	4/11/2003	EPA	S2560 9D/9C NE EPA#2	27.8	5.16	3.55	0.57	0.91	1.64	1.32	2.21	1.603277892
786	4/11/2003	EPA	S2561 9D/9C NE EPA#3	27.4	3.87	2.52	0.97	0.66	0.44	0.94	1.41	1.148564321
787	4/11/2003	EPA	S2562 9D/9C NE EPA#4	27.2	0.63	2.32	1	0.63	1.43	0.9	2.43	1.098590005
788	4/11/2003	EPA	S2563 9D/9C NE EPA#5	28.1	-0.14	2.45	1.79	0.66	0.66	0.93	2.45	1.140394669
Average Total Radium (Th-232+Ra-226) Concentration for :					9D/9C NE		2.02		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKESHORE EAST 9D/9C SE

Date of Verification Survey: APR. 11, 2003

Time of Verification Survey 10:00 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggren

Date APR. 11, 2003

Print Name RICHARD G. BERGGREN

Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 15, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 15, 2003

Print Name FREDRICK A. MICKE

Print Title ON-SCENE COORDINATOR

For USEPA Region 5 Fredrick A. Mickie

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
789	4/11/2003	EPA	S2564 9D/9C SE EPA#1	29.6	-2.49	2.59	2.51	0.71	1.17	0.98	3.68	1.210165278
790	4/11/2003	EPA	S2565 9D/9C SE EPA#2	32.2	7.02	2.97	1.68	0.78	1.92	1.1	3.6	1.348480626
791	4/11/2003	EPA	S2566 9D/9C SE EPA#3	32.6	3.02	2.17	0.85	0.57	3.75	0.84	4.6	1.015135459
792	4/11/2003	EPA	S2567 9D/9C SE EPA#4	30.7	-0.4	3.59	0.69	0.96	3.1	1.42	3.79	1.714059509
793	4/11/2003	EPA	S2568 9D/9C SE EPA#5	30.3	6.38	2.53	2.59	0.65	0.69	0.9	3.28	1.110180166
Average Total Radium (Th-232+Ra-226) Concentration for :					9D/9C SE		3.79		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKEHORE EAST 90/9C NW
Date of Verification Survey: APR. 11, 2003
Time of Verification Survey 10 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggreen
Date Apr. 11, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 15, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 15, 2003
Print Name FREDRICK A. MICKE
Print Title ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Mucke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
794	4/11/2003	EPA	S2569 9D/9C NW EPA#1	28.6	-2.08	2.37	1.67	0.64	1.28	0.91	2.95	1.112519663
795	4/11/2003	EPA	S2570 9D/9C NW EPA#2	26.7	5.28	2.68	0.39	0.7	2.03	1.02	2.42	1.237093368
796	4/11/2003	EPA	S2571 9D/9C NW EPA#3	26.4	-0.75	1.93	2.45	0.52	-0.91	0.72	1.54	0.888144132
797	4/11/2003	EPA	S2572 9D/9C NW EPA#4	26.6	5.88	2.55	0.62	0.67	2.84	0.97	3.46	1.17889779
798	4/11/2003	EPA	S2573 9D/9C NW EPA#5	25.7	-1.94	2.98	1.34	0.81	1.47	1.17	2.81	1.423024947
Average Total Radium (Th-232+Ra-226) Concentration for :					9D/9C NW		2.64		pCi/g			

APR-15-2003 14:25 FROM:USEPA REGION 5

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04/11/2003 13:54 FAX 847 2792535

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005/008

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEYArea Identification: LAKE SHORE EAST 9D/9C SWDate of Verification Survey: APR. 11, 2003Time of Verification Survey 10 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. BerggrenDate APR. 11, 2003Print Name RICHARD G. BERGGRENPrint Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 15, 2003. The results of this survey indicate that the verification criteria as contained in the UAB, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 15, 2003Print Name FREDRICK A. MICKEPrint Title ON-SCENE COORDINATORFor USEPA Region 5 Fredrick A. Mucke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
799	4/11/2003	EPA	S2574 9D/9C SW EPA#1	21.6	0.93	3.74	1.26	1.04	0.65	1.44	1.91	1.776288265
800	4/11/2003	EPA	S2575 9D/9C SW EPA#2	24.4	4.55	3.34	0.04	0.89	3.31	1.31	3.35	1.583729775
801	4/11/2003	EPA	S2576 9D/9C SW EPA#3	22.3	2.01	2.79	0.33	0.74	2.32	1.1	2.65	1.325745074
802	4/11/2003	EPA	S2577 9D/9C SW EPA#4	25.3	0.5	2.57	2.11	0.71	1.97	0.99	4.08	1.218277472
803	4/11/2003	EPA	S2578 9D/9C SW EPA#5	24.5	7.41	3.18	1.22	0.82	-0.02	1.14	1.2	1.404279175
Average Total Radium (Th-232+Ra-226) Concentration for :					9D/9C SW		2.64		pCi/g			

04/11/2003 13:54 FAX 847 2792535

STS CONSULTANTS.

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FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEYArea Identification: LAKE SHORE EAST 10 D #2Date of Verification Survey: APR. 11, 2003Time of Verification Survey 10 AM. am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. BerggreenDate APR. 11, 2003Print Name RICHARD G. BERGGREENPrint Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 15, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 15, 2003Print Name FREDRICK A. MICKPrint Title ON-SCENE COORDINATORFor USEPA Region 5 Fredrick A. Mucke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
804	4/11/2003	EPA	S2579 10D#2 EPA#1	28.8	0.83	2.64	0.49	0.71	1.39	1.04	1.88	1.259245806
805	4/11/2003	EPA	S2580 10D#2 EPA#2	28.7	0.69	2.87	1.65	0.79	1.6	1.11	3.25	1.36242431
806	4/11/2003	EPA	S2581 10D#2 EPA#3	28.7	2.95	3.16	0.95	0.84	1.28	1.2	2.23	1.464786674
807	4/11/2003	EPA	S2582 10D#2 EPA#4	30.6	8.08	3.72	1	0.93	-0.87	1.29	0.13	1.590282994
808	4/11/2003	EPA	S2583 10D#2 EPA#5	30.6	0.85	2.36	1.72	0.65	0.25	0.89	1.97	1.102088926
Average Total Radium (Th-232+Ra-226) Concentration for :					10D#2		1.89		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEYArea Identification: LAKEHORE EAST HC#1Date of Verification Survey: APR. 4, 2003Time of Verification Survey 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. BerggreenDate APR. 7, 2003Print Name RICHARD G. BERGGREENPrint Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 16, 2003Print Name FREDRICK A. MICKEPrint Title ON-SCENE COORDINATORFor USEPA Region 5 Fredrick A. Micke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
738	4/4/2003	EPA	S2517 11C#1 EPA#1	36.4	1.15	2.18	0.33	0.58	1.27	0.84	1.6	1.020784012
739	4/4/2003	EPA	S2518 11C#1 EPA#2	35.7	2.08	2.49	0.27	0.68	1.47	0.98	1.74	1.192811804
740	4/4/2003	EPA	S2519 11C#1 EPA#3	33.5	-1.69	1.64	0.9	0.45	0.36	0.64	1.26	0.7823682
741	4/4/2003	EPA	S2520 11C#1 EPA#4	36.5	8.6	3.15	1.46	0.8	-0.42	1.08	1.04	1.344023809
742	4/4/2003	EPA	S2521 11C#1 EPA#5	36.8	8.03	2.54	-0.4	0.64	3.25	0.97	2.85	1.16211015
Average Total Radium (Th-232+Ra-226) Concentration for :					11C#1		1.70		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKE SHORE EAST 11 C #2
Date of Verification Survey: APR. 4, 2003
Time of Verification Survey 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggreen
Date APR. 7, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 16, 2003
Print Name FREDRICK A. MICKEL
Print Title ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Mickel

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
743	4/4/2003	EPA	S2522 11C#2 EPA#1	31.8	5.93	2.59	1.5	0.67	2.74	0.97	4.24	1.17889779
744	4/4/2003	EPA	S2523 11C#2 EPA#2	32.3	10.52	3.22	0.68	0.81	2.34	1.17	3.02	1.423024947
745	4/4/2003	EPA	S2524 11C#2 EPA#3	32.5	1.86	2.77	1.63	0.74	1.41	1.03	3.04	1.268266534
746	4/4/2003	EPA	S2525 11C#2 EPA#4	29.4	5.47	2.27	1.9	0.59	1.99	0.83	3.89	1.018331969
747	4/4/2003	EPA	S2526 11C#2 EPA#5	32.9	-0.65	2.37	0.97	0.63	3.59	0.92	4.56	1.115033632
Average Total Radium (Th-232+Ra-226) Concentration for :					11C#2		3.75		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKEHORE EAST 11 D
Date of Verification Survey: APR. 4, 2003
Time of Verification Survey 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggreen
Date APR. 7, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 16, 2003
Print Name FREDRICK A. MICKE
Print Title ON-SCENE COORDINATOR

For USEPA Region 5 Fredrick A. Mickie

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
748	4/4/2003	EPA	S2527 11D EPA#1	35.4	6.96	3.13	0.6	0.79	2.52	1.16	3.12	1.40346001
749	4/4/2003	EPA	S2528 11D EPA#2	34.6	0.11	2.98	2.36	0.82	0.65	1.13	3.01	1.396173342
750	4/4/2003	EPA	S2529 11D EPA#3	36.7	3	2.91	-0.28	0.78	2.95	1.17	2.67	1.406164997
751	4/4/2003	EPA	S2530 11D EPA#4	32.9	2.81	2.22	0.79	0.59	2.46	0.86	3.25	1.042928569
752	4/4/2003	EPA	S2531 11D EPA#5	35.3	5.03	2.89	0.4	0.75	2.18	1.11	2.58	1.339626814
Average Total Radium (Th-232+Ra-226) Concentration for :					11D		2.93		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKEHORE EAST 10 C
Date of Verification Survey: APR. 4, 2003
Time of Verification Survey 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: RLG. Berggreen
Date APR. 7, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 16, 2003
Print Name FREDRICK A. MICKEL
Print Title ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Mickel

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
753	4/4/2003	EPA	S2532 10C EPA#1	32.2	6.17	2.92	1.74	0.74	0.58	1.03	2.32	1.268266534
754	4/4/2003	EPA	S2533 10C EPA#2	34.5	1.71	3.36	1.13	0.89	2.54	1.27	3.67	1.550806242
755	4/4/2003	EPA	S2534 10C EPA#3	32.6	-3.34	2	1.81	0.56	1.54	0.78	3.35	0.960208311
756	4/4/2003	EPA	S2535 10C EPA#4	31.1	6	3.97	0.66	1.02	1.51	1.45	2.17	1.772822608
757	4/4/2003	EPA	S2536 10C EPA#5	30.3	-0.27	3.33	0.33	0.89	1.89	1.29	2.22	1.56722685
Average Total Radium (Th-232+Ra-226) Concentration for :					10C		2.75		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKESHORE EAST 10 D #1
Date of Verification Survey: APR. 4, 2003
Time of Verification Survey: 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggren
Date: APR. 7, 2003
Print Name: RICHARD G. BERGGREN
Print Title: PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Date: April 16, 2003
Print Name: FREDRICK A. MICKE
Print Title: ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Micka

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
758	4/4/2003	EPA	S2537 10D#1 EPA#1	31.6	-1.08	2.16	2.44	0.6	0.36	0.82	2.8	1.016070864
759	4/4/2003	EPA	S2538 10D#1 EPA#2	29.8	6.57	2.69	1.92	0.7	2	0.98	3.92	1.204325537
760	4/4/2003	EPA	S2539 10D#1 EPA#3	34.5	1.99	3.3	1.56	0.9	2.96	1.26	4.52	1.548418548
761	4/4/2003	EPA	S2540 10D#1 EPA#4	33.6	-1.67	3.02	1.24	0.84	3.83	1.21	5.07	1.472990156
762	4/4/2003	EPA	S2541 10D#1 EPA#5	34.3	-2.79	2.85	1.38	0.79	1.75	1.15	3.13	1.395206078
Average Total Radium (Th-232+Ra-226) Concentration for :					10D#1		3.89		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKEHORE EAST 9C
Date of Verification Survey: APR. 4, 2003
Time of Verification Survey 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Richard G. Berggreen
Date APR. 7, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 16, 2003
Print Name FREDRICK A. MICKE
Print Title ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Micke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
763	4/4/2003	EPA	S2542 9C EPA#1	28.6	2.55	2.98	0.8	0.79	1.44	1.14	2.24	1.386975126
764	4/4/2003	EPA	S2543 9C EPA#2	27.7	2.13	2.5	0.01	0.67	2.83	1.02	2.84	1.220368797
765	4/4/2003	EPA	S2544 9C EPA#3	31.2	5.35	3.98	1.4	1.01	1.07	1.45	2.47	1.767088
766	4/4/2003	EPA	S2545 9C EPA#4	29.8	4.59	2.86	0.16	0.78	4.1	1.13	4.26	1.373062271
767	4/4/2003	EPA	S2546 9C EPA#5	32.6	0.09	3.5	1.81	0.93	1.58	1.31	3.39	1.606549097
Average Total Radium (Th-232+Ra-226) Concentration for :					9C		3.04		pCi/g			

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LAKE SHORE EAST 10 D #3
Date of Verification Survey: APR. 4, 2003
Time of Verification Survey 9 AM am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the USEPA.

Signed: Phil S. Buggreen
Date APR. 7, 2003
Print Name RICHARD G. BERGGREEN
Print Title PROJECT COORDINATOR

STS Consultants, Ltd.

The attached Verification Survey documents were reviewed by USEPA, Region 5 on April 16, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation.

Date April 16, 2003
Print Name FREDRICK A. MICKÉ
Print Title ON-SCENE COORDINATOR
For USEPA Region 5 Fredrick A. Mücke

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for April 4, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
768	4/4/2003	EPA	S2547 10D#3 EPA#1	34.6	1.85	2.04	1.65	0.55	1.47	0.77	3.12	0.946255779
769	4/4/2003	EPA	S2548 10D#3 EPA#2	34.8	5.31	2.57	1.91	0.68	0.3	0.94	2.21	1.160172401
770	4/4/2003	EPA	S2549 10D#3 EPA#3	34.2	4.35	1.83	0.9	0.48	2.12	0.69	3.02	0.840535544
771	4/4/2003	EPA	S2550 10D#3 EPA#4	33.4	-0.07	2.59	1.78	0.69	1.69	0.97	3.47	1.190378091
772	4/4/2003	EPA	S2551 10D#3 EPA#5	35.7	4.8	3.24	1.45	0.86	0.62	1.2	2.07	1.476346843
Average Total Radium (Th-232+Ra-226) Concentration for :					10D#3			2.78		pCi/g		

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSEC-218-73 (EPA# - EPA#5)

Date of Verification Survey: 6/20/03

Time of Verification Survey 8:30 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

Steven C. Kordeck Date 6/20/03

Steven C. Kordeck (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on June 30, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 6/20/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

06/20/2003 14:40 FAX 847 2792535

STS CONSULTANTS.

847 279 2535 P.01/01

JUN-20-2003 14:55

INCC WEST CHICAGO PROJ.

06/20/2003 14:16 FAX 830 231 3890

0001/001

Nutrient Gamma Spec Report

Weight	U-238	±	Th-232	±	Ra-226	±	K-40	±	Tot Rad	±	Tot U	±
28.50	-0.55	1.22	0.00	0.29	1.00	0.47	29.00	8.21	1.00	0.55	-1.13	2.90
29.30	1.12	1.17	0.00	0.28	1.00	0.44	21.90	7.54	1.00	0.52	1.28	2.39
28.90	-0.68	1.21	0.00	0.29	1.00	0.47	21.00	7.79	1.00	0.55	-1.39	2.58
29.10	-1.27	0.81	0.00	0.20	0.00	0.34	15.00	6.37	0.00	0.39	-1.60	1.70
28.60	0.31	1.09	0.00	0.26	1.00	0.40	38.00	7.49	1.00	0.48	1.04	2.23

Reviewed
 Date: 6/20/03
 By: [Signature]

Date: 6/20/03 C-218-73

Sample Date Description

3360 6/20/03 EPA #1
 3361 6/20/03 EPA #2
 3362 6/20/03 EPA #3
 3363 6/20/03 EPA #4
 3363 6/20/03 EPA #5

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSE C-201(31) #1 (EPA#1-#5)

Date of Verification Survey: 7/8/03

Time of Verification Survey 2:30 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

Steven C. Karnder Date 7/9/03

Steven C. Karnder (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on July 10, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 7/10/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSE C-201(31) #2 (EPA #1 - #5)

Date of Verification Survey: 7/8/03

Time of Verification Survey 7:30 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

Steven C. Koender Date 7/9/03

Steven C. Koender (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 7/9/03. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 7/10/03

FREDRICK A MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for July 8, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
831	7/8/03	EPA	S2593 C-201(31)#1 EPA #1	31.4	3.06	2.15	2.11	0.57	0.31	0.78	2.42	0.97416631
832	7/8/03	EPA	S2594 C-201(31)#1 EPA #2	30.7	-3.6	2.3	2.89	0.65	1.65	0.9	4.34	1.110180166
833	7/8/03	EPA	S2595 C-201(31)#1 EPA #3	29.5	3.68	2.72	1.59	0.74	1.12	1.04	2.71	1.278401191
834	7/8/03	EPA	S2596 C-201(31)#1 EPA #4	28.8	-0.44	2.79	1.48	0.78	1.24	1.1	2.72	1.348480626
835	7/8/03	EPA	S2597 C-201(31)#1 EPA #5	29.9	6.41	2.68	1.6	0.7	1.78	1	3.38	1.220655562

Average Total Radium (Th-232+Ra-226) Concentration for : C-201(31) #1 3.11 pCi/g

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
836	7/8/03	EPA	S2598 C-201(31)#2 EPA #1	29.8	-1.81	2.48	1.35	0.68	1.7	1	3.05	1.209297317
837	7/8/03	EPA	S2599 C-201(31)#2 EPA #2	28.8	2.65	2.26	0.78	0.61	1.41	0.88	2.19	1.070747403
838	7/8/03	EPA	S2600 C-201(31)#2 EPA #3	28.5	6.19	2.1	0.68	0.54	0.99	0.78	1.65	0.948683298
839	7/8/03	EPA	S2801 C-201(31)#2 EPA #4	29.3	3.55	2.68	-0.28	0.71	3.39	1.08	3.1	1.300845879
840	7/8/03	EPA	S2602 C-201(31)#2 EPA #5	28.3	2.81	2.31	1.08	0.61	1.41	0.9	2.47	1.087244223

Average Total Radium (Th-232+Ra-226) Concentration for : C-201(31) #2 2.49 pCi/g

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSE 12C#1

Date of Verification Survey: 8/27/03

Time of Verification Survey 9:00 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

[Signature] Date 8/29/03

Steve Kornder (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on Aug 29, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 8/29/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSE - 12C #2

Date of Verification Survey: 8/27/03

Time of Verification Survey 9:00 ampm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

[Signature] Date 8/28/03
Steve Korndor (Print Name)
Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on Aug 29, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 8/29/03
FREDRICK A. MICKE (Print Name)
ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSE 12C#3

Date of Verification Survey: 8/27/03

Time of Verification Survey 9:00 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

[Signature]

Date 8/28/03

Steve Korader

(Print Name)

Project Manager

(Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on Aug 29, 2003. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke

Date 8/29/03

FREDRICK A. MICKE

(Print Name)

ON-SCENE COORDINATOR

(Print Title)

For U.S. EPA Region V

Exclusion Zone Confirmatory Samples for August 27, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
859	8/27/03	EPA	S2615 12C#1 EPA#1	29.5	1.6	2.06	0.63	0.56	3.01	0.83	3.64	1.00124922
860	8/27/03	EPA	S2616 12C#1 EPA#2	28.7	4.21	1.93	1.77	0.51	1.05	0.72	2.82	0.88232647
861	8/27/03	EPA	S2617 12C#1 EPA#3	26.4	2.59	2.58	1.42	0.68	0.95	0.97	2.37	1.18460964
862	8/27/03	EPA	S2618 12C#1 EPA#4	30.3	3.98	2.49	1.56	0.65	1.07	0.92	2.63	1.126454615
863	8/27/03	EPA	S2619 12C#1 EPA#5	25.5	-2.24	2.26	1.83	0.63	1.14	0.91	2.97	1.106797181

Average Total Radium (Th-232+Ra-226) Concentration for : 12C#1 2.89 pCi/g

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
864	8/27/03	EPA	S2620 12C#2 EPA#1	35.3	3.42	2.14	0.63	0.58	3.19	0.85	3.82	1.029028668
865	8/27/03	EPA	S2621 12C#2 EPA#2	37.2	3.67	3.23	1.92	0.86	2.41	1.23	4.33	1.500833102
866	8/27/03	EPA	S2622 12C#2 EPA#3	35.5	2.69	3.14	3	0.82	0.3	1.12	3.3	1.388092216
867	8/27/03	EPA	S2623 12C#2 EPA#4	37.9	4.36	2.61	1.09	0.69	2.49	1	3.58	1.214948559
868	8/27/03	EPA	S2624 12C#2 EPA#5	38.1	4.3	2.37	1.11	0.62	2.78	0.91	3.89	1.101135777

Average Total Radium (Th-232+Ra-226) Concentration for : 12C#2 3.78 pCi/g

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
869	8/27/03	EPA	S2625 12C#3 EPA#1	23.7	-1.73	2.32	1.98	0.65	1.46	0.94	3.44	1.142847321
870	8/27/03	EPA	S2626 12C#3 EPA#2	22.5	4.25	2.11	0.51	0.55	1.38	0.82	1.89	0.987370245
871	8/27/03	EPA	S2627 12C#3 EPA#3	22.3	6.08	2.56	-0.07	0.66	2.85	1	2.78	1.198165264
872	8/27/03	EPA	S2628 12C#3 EPA#4	23.5	1.27	3.25	0.42	0.87	2.54	1.29	2.96	1.555958298
873	8/27/03	EPA	S2629 12C#3 EPA#5	22.8	-0.24	3.1	1.79	0.86	1.74	1.21	3.53	1.484486443

Average Total Radium (Th-232+Ra-226) Concentration for : 12C#3 2.92 pCi/g

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSE - 13D East

Date of Verification Survey: 11/11/03

Time of Verification Survey 9:30 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

Steve Karader Date 11/11/03

Steve Karader (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 11/12/03. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 11/12/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSF - 13D West

Date of Verification Survey: 11/14/03

Time of Verification Survey 9:30 ampm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

Steve Karader Date 11/14/03

Steve Karader (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 11/12/03. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 11/12/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

FORM 223-1
NOTIFICATION OF SUCCESSFUL VERIFICATION SURVEY

Area Identification: LSF-C-2-3 Caisson

Date of Verification Survey: 11/11/03

Time of Verification Survey 9:30 am/pm

The above-described excavation was surveyed at the time and date indicated above. The survey indicated that all soils have been removed as required by the Site Removal Action Criteria.

Documents pertaining to this survey are attached for review and approval by the U.S. EPA.

Signed:

Steve Kucader Date 11/11/03

Steve Kucader (Print Name)

Project Manager (Print Title)



STS Consultants, Ltd.
Solutions through Science & Engineering

The attached Verification Survey documents were reviewed by U.S. EPA, Region V on 11/12/03. The results of this survey indicate that the verification criteria as contained in the UAO, have been met.

Authorization is hereby granted to commence backfill and restoration work at this excavation

Signed:

Fredrick A. Micke Date 11/12/03

FREDRICK A. MICKE (Print Name)

ON-SCENE COORDINATOR (Print Title)

For U.S. EPA Region V

Nutranl Gamma Spec Report- Lakeshore East Project

221 North Columbus Drive, Chicago, IL

Exclusion Zone Confirmatory Samples for November 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
909	11/11/03	EPA	S2659 C.2-3 Caisson EPA#1	38.4	1.98	2.39	0.86	0.74	1.53	0.97	2.49	1.220040983
910	11/11/03	EPA	S2660 C.2-3 Caisson EPA#2	37.4	3.99	2.82	1.44	0.85	0.46	1.1	1.9	1.390143877
911	11/11/03	EPA	S2661 C.2-3 Caisson EPA#3	36.7	2.76	2.73	0.13	0.85	1.31	1.16	1.44	1.43808901
912	11/11/03	EPA	S2662 C.2-3 Caisson EPA#4	40.5	-0.3	1.7	2.54	0.53	0.2	0.7	2.74	0.878009112
913	11/11/03	EPA	S2663 C.2-3 Caisson EPA#5	37.6	0.87	3.29	-0.22	1.04	2.1	1.45	1.88	1.784404863

Average Total Radium (Th-232+Ra-226) Concentration for : C.2-3 Caisson 2.09 pCi/g

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
914	11/11/03	EPA	S2664 13D East EPA#1	31.6	-3.43	2.14	2.24	0.88	2.31	0.92	4.55	1.144027972
915	11/11/03	EPA	S2665 13D East EPA#2	31.3	-2.37	2.59	3.06	0.82	-0.14	1.06	2.92	1.340149245
916	11/11/03	EPA	S2666 13D East EPA#3	27.8	0.3	2.92	1.08	0.92	2.3	1.24	3.38	1.544020725
917	11/11/03	EPA	S2667 13D East EPA#4	33.6	-2.28	2.54	1.59	0.8	2.15	1.07	3.74	1.336001497
918	11/11/03	EPA	S2668 13D East EPA#5	33.2	-3.57	1.78	2.98	0.57	0.51	0.74	3.49	0.934077085

Average Total Radium (Th-232+Ra-226) Concentration for : 13D East 3.62 pCi/g

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
919	11/11/03	EPA	S2669 13D West EPA#1	27.6	-5.38	3.61	1.54	1.17	0.82	1.57	2.36	1.958009193
920	11/11/03	EPA	S2670 13D West EPA#2	26.5	0.75	2.11	0.98	0.65	2.59	0.89	3.57	1.102088926
921	11/11/03	EPA	S2671 13D West EPA#3	29.6	0.38	3.86	2.06	1.18	-0.74	1.52	1.32	1.924286094
922	11/11/03	EPA	S2672 13D West EPA#4	27.7	1.81	2.07	1.34	0.64	1.25	0.84	2.59	1.056030303
923	11/11/03	EPA	S2673 13D West EPA#5	28.4	1.71	2.45	1.32	0.77	1.03	1.01	2.35	1.270039369

Average Total Radium (Th-232+Ra-226) Concentration for : 13D West 2.44 pCi/g



B



THE
INFRASTRUCTURE
IMPERATIVE



APPENDIX B

Correspondence with USEPA





STS CONSULTANTS

STS Consultants, Ltd.
750 Corporate Woods Parkway
Vernon Hills, Illinois 60061-3153
voice 847-279-2500
fax 847-279-2510
web www.stsconsultants.com

September 16, 2003

Mr. Fred Micke, On-Scene Coordinator
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd., SE-5J
Chicago, Illinois 60604

RE: Survey of Wick Drain Spoil Soils for Radiological-Impact, Lakeshore East Site, 221 North Columbus Drive, Chicago, Illinois – STS Project No. 1-32193-XC

Dear Mr. Micke:

This letter is to advise the USEPA of the ongoing radiological surveying activities at the Lakeshore East site and indicate our understanding, per our phone conversation of August 5, 2003. The installation of wick drains in the southern slip utilized a 30-foot boring and resulted in the generation of a small amount of surface spoil material that is estimated to be less than 1 cubic foot per wick drain. During the installation of wick drains in the southern slip on July 28, 2003 field survey personnel (S. A. Huber) observed a gamma reading of 27,000 counts per minute (cpm) at one of the wick drains. This observed reading was slightly above cutoff the value of 20,352 cpm. The spoil material was observed to contain ash and brick fragments. As discussed with the USEPA, it is unclear whether the slightly elevated readings were attributable to the presence of the brick material.

The attached section of the wick drain installation plan indicates the position of the drain as 174 ft. west of the property line along Harbor Drive and 109 ft. north of the property line for 400 East Randolph. The wick drain area containing the soil/spoil material with the elevated gamma readings was placed in a plastic bag. The ground surface area was then surveyed and determined to be consistent with background gamma levels. The bagged material was stored in a secure area onsite and will be disposed with other radiologically-impacted material from the site. Spoil material generated at the surrounding series of drains installed about 5 feet away exhibited no evidence of elevated gamma readings. Thus, the impacted material with elevated readings appeared to be isolated. Additionally, no elevated gamma readings were observed in the spoil of the other wick drains (>1400) installed within the southern slip.


The wick drain is located within the proposed park drive right-of-way. The current elevation of the surface at the drain is approximately 7 ft. CCD. However, the final elevation for the roadway is proposed to be 23.9 ft. CCD. Thus, the existing surface will be covered with about 17 feet of fill soil, which will essentially preclude the potential for future exposure. A call was placed to Mr. Fred Micke (USEPA) to discuss the investigation of the wick-drain on August 5, 2003. In the call the USEPA and STS agreed that additional investigation/removal activities were not warranted given the absence of elevated readings at the surface, the planned placement of additional fill soils, the short distance to the water table, the isolated nature of the impacted material (based on the survey of surrounding spoil piles) and difficulties in conducting excavation activities within the newly stalled wick drain field. However, at USEPA's request, a notice will be included within the deed on which the potentially impacted soil will remain.

Please feel free to contact us if you have any questions or need additional information.

Regards,

STS CONSULTANTS, LTD.


Steven C. Kornder, Ph.D.
Senior Project Geochemist

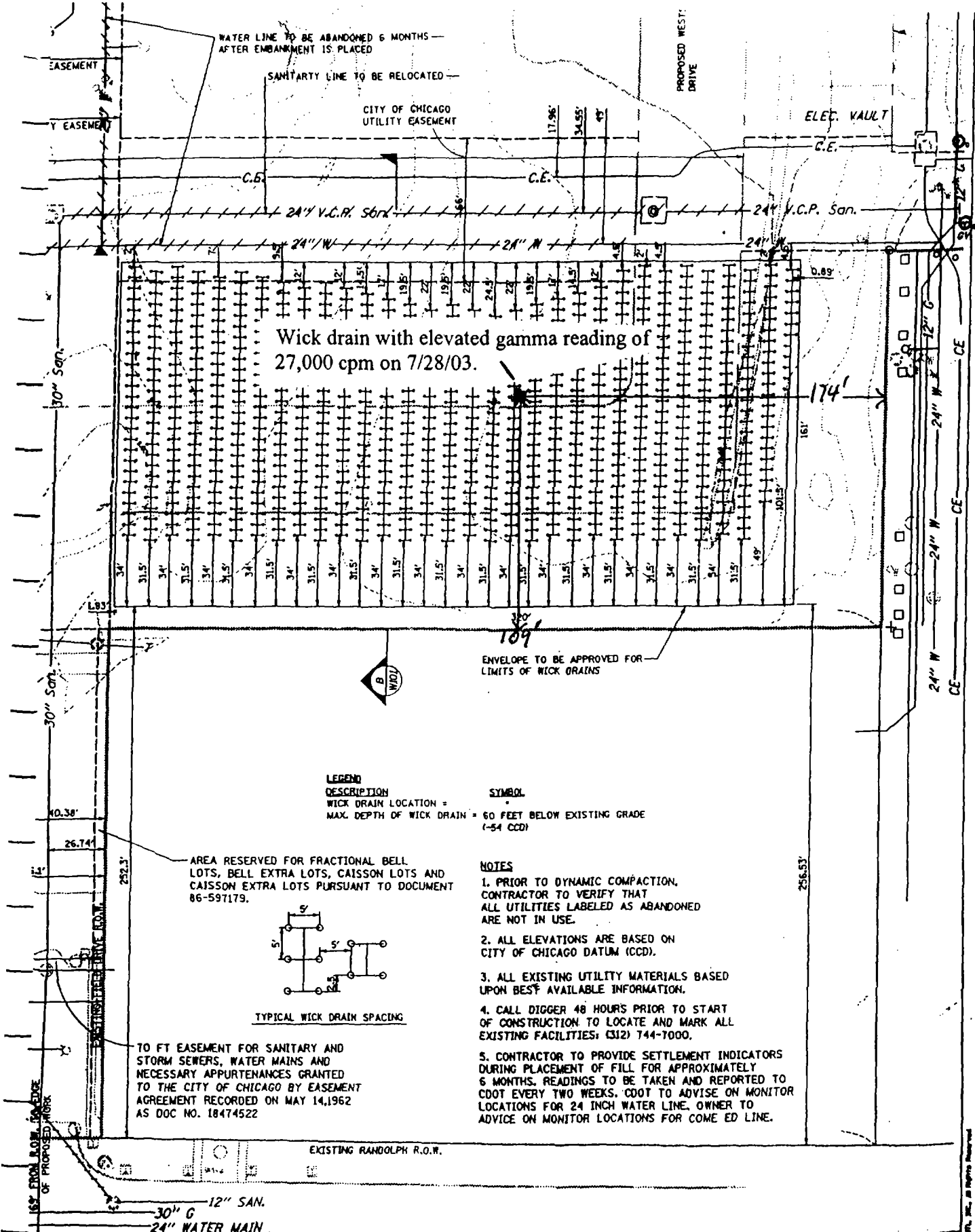

Douglas J. Hermann, P.E.
Principal Engineer

cc: Kara Hughes, Lakeshore East Development, LLC

Attachment

ATTACHMENT A

Portion of Wick Drain Plan Drawing



LEGEND

DESCRIPTION

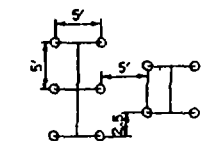
WICK DRAIN LOCATION =
MAX. DEPTH OF WICK DRAIN =

SYMBOL

60 FEET BELOW EXISTING GRADE
(-54 CCD)

NOTES

1. PRIOR TO DYNAMIC COMPACTION, CONTRACTOR TO VERIFY THAT ALL UTILITIES LABELED AS ABANDONED ARE NOT IN USE.
2. ALL ELEVATIONS ARE BASED ON CITY OF CHICAGO DATUM (CCD).
3. ALL EXISTING UTILITY MATERIALS BASED UPON BEST AVAILABLE INFORMATION.
4. CALL DIGGER 48 HOURS PRIOR TO START OF CONSTRUCTION TO LOCATE AND MARK ALL EXISTING FACILITIES; (312) 744-7000.
5. CONTRACTOR TO PROVIDE SETTLEMENT INDICATORS DURING PLACEMENT OF FILL FOR APPROXIMATELY 6 MONTHS. READINGS TO BE TAKEN AND REPORTED TO COOT EVERY TWO WEEKS. COOT TO ADVISE ON MONITOR LOCATIONS FOR 24 INCH WATER LINE. OWNER TO ADVISE ON MONITOR LOCATIONS FOR COME ED LINE.



TYPICAL WICK DRAIN SPACING

TO FT EASEMENT FOR SANITARY AND STORM SEWERS, WATER MAINS AND NECESSARY APPURTENANCES GRANTED TO THE CITY OF CHICAGO BY EASEMENT AGREEMENT RECORDED ON MAY 14, 1962 AS DOC NO. 18474522

EXISTING RANDOLPH R.O.W.

TEIN

LAKESHORE EAST DEVELOPMENT

WICK DRAIN PLAN

SHEET NUMBER

W100

INTERNATIONAL, INC.
CHICAGO, ILLINOIS 60601-0000
437 N. LAUREL ST., SUITE 200
CHICAGO, ILL. 60610
312-527-1100 FAX 312-527-1101

LAKESHORE EAST, LLC
1 WEST SUPERIOR STREET, SUITE 200
(312) 440-9600

DESIGN PROJECT NO. 21228
PLOTTED: 6/17/03



THE
INFRASTRUCTURE
IMPERATIVE

C



APPENDIX C

Radiological Soil Sample Analyses

a. NUTRANL

- i. Chronological List
- ii. Imported Fill Soil Analyses

b. RSSI Gamma Spectroscopy



a. **NUTRANL Analyses**



STS CONSULTANTS

i. CHRONOLOGICAL LIST



Nutranl Gamma Spec Report- Lakeshore East Site								221 North Columbus Drive, Chicago, IL				
Daily Report for 3/26/03 & 3/27/03												
Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group			Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
684	3/26/2003	background	bkg032603	7.5	3.14	1.77	-0.37	0.47	-0.09	0.69	-0.46	0.834865259
685	3/26/2003	soil standard	soilstd032603	36.9	1.81	2.35	5.76	0.62	1.94	0.83	7.7	1.036001931
686	3/26/2003	exclusion zone	S2479 9D North	20.4	-56.47	15.14	122.53	3.96	32.54	4.9	155.07	6.300126983
687	3/26/2003	exclusion zone	S2480 9D South	25.5	-60.55	15.48	104.48	4.09	72.49	5.38	176.97	6.758143236
688	3/27/2003	background	bkg032703	7.5	3.84	2.23	0.34	0.6	0.05	0.87	0.39	1.056834897
689	3/27/2003	soil standard	soilstd032703	36.9	12.78	3.08	5.35	0.78	0.9	1.03	6.25	1.292013932
690	3/27/2003	Pre EPA	S2481 36A	41.5	-4.94	1.99	2.23	0.56	-0.11	0.79	2.12	0.968349111
691	3/27/2003	EPA	S2482 9A#1 EPA#1	26.7	3.6	2.22	1.25	0.59	1.55	0.83	2.8	1.018331969
692	3/27/2003	EPA	S2483 9A#1 EPA#2	23.4	-0.3	2.76	1.89	0.74	1.49	1.06	3.38	1.292749009
693	3/27/2003	EPA	S2484 9A#1 EPA#3	24.6	6.3	2.32	1	0.61	2.62	0.88	3.62	1.070747403
694	3/27/2003	EPA	S2485 9A#1 EPA#4	25.3	3.35	2.55	1.61	0.68	0.6	0.96	2.21	1.176435294
695	3/27/2003	EPA	S2486 9A#1 EPA#5	24.6	-0.59	2.46	1.74	0.67	1.09	0.94	2.83	1.154339638
696	3/27/2003	EPA	S2487 9A#2 EPA#1	23.7	3.01	2.26	0.78	0.6	0.79	0.86	1.57	1.048618138
697	3/27/2003	EPA	S2488 9A#2 EPA#2	25.6	5.58	1.65	0.38	0.43	1.39	0.62	1.77	0.754519715
698	3/27/2003	EPA	S2489 9A#2 EPA#3	24.7	0.31	1.62	1.43	0.44	0.68	0.62	2.11	0.760263112
699	3/27/2003	EPA	S2490 9A#2 EPA#4	22.5	0.63	2.26	1.14	0.62	1.63	0.88	2.77	1.076475731
700	3/27/2003	EPA	S2491 9A#2 EPA#5	24.6	0	2	0.62	0.54	2.07	0.78	2.69	0.948683298
701	3/27/2003	EPA	S2492 9B EPA#1	26.5	4.25	2.18	2.01	0.58	1.58	0.8	3.59	0.988129546
702	3/27/2003	EPA	S2493 9B EPA#2	27.4	6.08	2.6	-0.07	0.68	4.45	1.01	4.38	1.217579566
703	3/27/2003	EPA	S2494 9B EPA#3	26.8	1.18	1.91	1.73	0.51	1.76	0.73	3.49	0.890505474
704	3/27/2003	EPA	S2495 9B EPA#4	27.5	1.46	2.48	2.5	0.67	1.02	0.92	3.52	1.138112472
705	3/27/2003	EPA	S2496 9B EPA#5	26.7	1.27	2.61	2.22	0.7	1.1	0.98	3.32	1.204325537
706	3/27/2003	EPA	S2497 36A EPA#1	31.6	1.24	2.84	1.85	0.75	-1.44	1.02	0.41	1.266056871
707	3/27/2003	EPA	S2498 36A EPA#2	33.5	2.22	1.83	1.21	0.48	0.05	0.68	1.26	0.832346082
708	3/27/2003	EPA	S2499 36A EPA#3	30.9	2.24	2.67	0.25	0.7	1.55	1.04	1.8	1.253634716

Nutranl Gamma Spec Report- Lakeshore East Site								221 North Columbus Drive, Chicago, IL				
Summary of Lakeshore East Site Samples Through April 11, 2003												
Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
691	3/27/2003	EPA	S2482 9A#1 EPA#1	26.7	3.6	2.22	1.25	0.59	1.55	0.83	2.8	1.018331969
692	3/27/2003	EPA	S2483 9A#1 EPA#2	23.4	-0.3	2.76	1.89	0.74	1.49	1.06	3.38	1.292749009
693	3/27/2003	EPA	S2484 9A#1 EPA#3	24.6	6.3	2.32	1	0.61	2.62	0.88	3.62	1.070747403
694	3/27/2003	EPA	S2485 9A#1 EPA#4	25.3	3.35	2.55	1.61	0.68	0.6	0.96	2.21	1.176435294
695	3/27/2003	EPA	S2486 9A#1 EPA#5	24.6	-0.59	2.46	1.74	0.67	1.09	0.94	2.83	1.154339638
696	3/27/2003	EPA	S2487 9A#2 EPA#1	23.7	3.01	2.26	0.78	0.6	0.79	0.86	1.57	1.048618138
697	3/27/2003	EPA	S2488 9A#2 EPA#2	25.6	5.58	1.65	0.38	0.43	1.39	0.62	1.77	0.754519715
698	3/27/2003	EPA	S2489 9A#2 EPA#3	24.7	0.31	1.62	1.43	0.44	0.68	0.62	2.11	0.760263112
699	3/27/2003	EPA	S2490 9A#2 EPA#4	22.5	0.63	2.26	1.14	0.62	1.63	0.88	2.77	1.076475731
700	3/27/2003	EPA	S2491 9A#2 EPA#5	24.6	0	2	0.62	0.54	2.07	0.78	2.69	0.948683298
701	3/27/2003	EPA	S2492 9B EPA#1	26.5	4.25	2.18	2.01	0.58	1.58	0.8	3.59	0.988129546
702	3/27/2003	EPA	S2493 9B EPA#2	27.4	6.08	2.6	-0.07	0.68	4.45	1.01	4.38	1.217579566
703	3/27/2003	EPA	S2494 9B EPA#3	26.8	1.18	1.91	1.73	0.51	1.76	0.73	3.49	0.890505474
704	3/27/2003	EPA	S2495 9B EPA#4	27.5	1.46	2.48	2.5	0.67	1.02	0.92	3.52	1.138112472
705	3/27/2003	EPA	S2496 9B EPA#5	26.7	1.27	2.61	2.22	0.7	1.1	0.98	3.32	1.204325537
706	3/27/2003	EPA	S2497 36A EPA#1	31.6	1.24	2.84	1.85	0.75	-1.44	1.02	0.41	1.266056871
707	3/27/2003	EPA	S2498 36A EPA#2	33.5	2.22	1.83	1.21	0.48	0.05	0.68	1.26	0.832346082
708	3/27/2003	EPA	S2499 36A EPA#3	30.9	2.24	2.67	0.25	0.7	1.55	1.04	1.8	1.253634716
709	3/27/2003	EPA	S2500 36A EPA#4	31.8	6.38	2.59	0.62	0.68	0.02	0.95	0.64	1.168289348
710	3/27/2003	EPA	S2501 36A EPA#5	31.5	2.68	2.12	0.36	0.56	0.64	0.81	1	0.984733466
711	3/27/2003	exclusion zone	S2502 11C #1	37.6	2.06	2.69	1.52	0.71	1.28	1.01	2.8	1.23458495
712	3/27/2003	exclusion zone	S2503 11C #2	27.4	7.41	3.36	4.5	0.89	5.37	1.21	9.87	1.502065245
713	3/27/2003	lift spot	S2504 11B	22.7	-0.37	3.53	1.14	0.96	3.46	1.4	4.6	1.697527614
714	3/28/2003	background	bkg032803	7.5	0.9	2.06	-1.17	0.57	1.36	0.87	0.19	1.040096149
715	3/28/2003	soil standard	soilstd032803	36.9	6.93	2.82	4.53	0.74	2.99	1	7.52	1.244025723
716	3/31/2003	background	bkg033103	7.5	2.15	2.29	0.9	0.63	-1.46	0.88	-0.56	1.082266141
717	3/31/2003	soil standard	soilstd033103	36.9	0.92	3.3	4.67	0.88	3.02	1.19	7.69	1.480033783
718	4/1/2003	background	bkg040103	7.5	5.62	2.43	-0.88	0.63	0.14	0.96	-0.74	1.148259553
719	4/1/2003	soil standard	soilstd040103	36.9	1.14	2.78	4.41	0.74	3.65	1.02	8.06	1.26015872
720	4/2/2003	background	bkg040203	7.5	0.39	1.87	-0.14	0.51	0.27	0.74	0.13	0.898721314
721	4/2/2003	soil standard	soilstd040203	36.9	2.23	2.35	5.57	0.64	2.6	0.85	8.17	1.06400188
722	4/2/2003	Pre EPA	S2505 11C#1	28.5	2.37	3.46	0.86	0.94	3.11	1.34	3.97	1.636826197
723	4/2/2003	Pre EPA	S2506 11C#2	31.6	0.8	2.73	1.43	0.74	1.12	1.06	2.55	1.292749009
724	4/2/2003	Pre EPA	S2507 11D	31.2	9.93	3.25	0.94	0.81	2.33	1.2	3.27	1.447791421
725	4/3/2003	background	bkg040303	7.5	2.65	1.65	-0.69	0.44	0.77	0.66	0.08	0.793221281

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Summary of Lakeshore East Site Samples Through April 11, 2003												
Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
726	4/3/2003	soil standard	soilstd040303	36.9	-1.82	2.19	4.62	0.6	4.15	0.82	8.77	1.016070864
727	4/3/2003	Pre EPA	S2508 10C	28.5	1.55	3.18	2.22	0.83	1.14	1.16	3.36	1.426359001
728	4/3/2003	Pre EPA	S2509 10D#1	32.4	1.77	3.28	2.69	0.86	0.76	1.19	3.45	1.468230227
729	4/3/2003	Pre EPA	S2510 10D#2 (1)	27.3	6.08	3.8	1.94	0.99	1.03	1.38	2.97	1.698381583
730	4/3/2003	Pre EPA	S2511 10D#2 (2)	31.3	0.88	2.95	2.87	0.78	-1.76	1.05	1.11	1.308013761
731	4/3/2003	Pre EPA	S2512 10D#2 (3)	35.5	8.11	4.26	1.38	1.08	0.47	1.48	1.85	1.832157198
732	4/3/2003	Pre EPA	S2513 10D#2 (4)	36.3	2.97	2.89	1.51	0.75	1.86	1.1	3.37	1.331352696
733	4/3/2003	Pre EPA	S2514 10D#3	31.1	-0.53	4.22	2.38	1.15	2.48	1.62	4.86	1.986680649
734	4/3/2003	Pre EPA	S2515 9C (1)	28.5	-0.65	4.09	1.68	1.15	1.52	1.62	3.2	1.986680649
735	4/3/2003	Pre EPA	S2516 9C (2)	34.7	3.08	3.83	1.9	0.99	-0.74	1.4	1.16	1.71467198
736	4/4/2003	background	bkg040403	7.5	1.66	1.94	0.49	0.53	-1.13	0.76	-0.64	0.926552751
737	4/4/2003	soil standard	soilstd040403	36.9	4.46	2.82	4.83	0.75	2.71	1	7.54	1.25
738	4/4/2003	EPA	S2517 11C#1 EPA#1	36.4	1.15	2.18	0.33	0.58	1.27	0.84	1.6	1.020784012
739	4/4/2003	EPA	S2518 11C#1 EPA#2	35.7	2.08	2.49	0.27	0.68	1.47	0.98	1.74	1.192811804
740	4/4/2003	EPA	S2519 11C#1 EPA#3	33.5	-1.69	1.64	0.9	0.45	0.36	0.64	1.26	0.7823682
741	4/4/2003	EPA	S2520 11C#1 EPA#4	36.5	8.6	3.15	1.46	0.8	-0.42	1.08	1.04	1.344023809
742	4/4/2003	EPA	S2521 11C#1 EPA#5	36.8	8.03	2.54	-0.4	0.64	3.25	0.97	2.85	1.16211015
743	4/4/2003	EPA	S2522 11C#2 EPA#1	31.8	5.93	2.59	1.5	0.67	2.74	0.97	4.24	1.17889779
744	4/4/2003	EPA	S2523 11C#2 EPA#2	32.3	10.52	3.22	0.68	0.81	2.34	1.17	3.02	1.423024947
745	4/4/2003	EPA	S2524 11C#2 EPA#3	32.5	1.86	2.77	1.63	0.74	1.41	1.03	3.04	1.268266534
746	4/4/2003	EPA	S2525 11C#2 EPA#4	29.4	5.47	2.27	1.9	0.59	1.99	0.83	3.89	1.018331969
747	4/4/2003	EPA	S2526 11C#2 EPA#5	32.9	-0.65	2.37	0.97	0.63	3.59	0.92	4.56	1.115033632
748	4/4/2003	EPA	S2527 11D EPA#1	35.4	6.96	3.13	0.6	0.79	2.52	1.16	3.12	1.40346001
749	4/4/2003	EPA	S2528 11D EPA#2	34.6	0.11	2.98	2.36	0.82	0.65	1.13	3.01	1.396173342
750	4/4/2003	EPA	S2529 11D EPA#3	36.7	3	2.91	-0.28	0.78	2.95	1.17	2.67	1.406164997
751	4/4/2003	EPA	S2530 11D EPA#4	32.9	2.81	2.22	0.79	0.59	2.46	0.86	3.25	1.042928569
752	4/4/2003	EPA	S2531 11D EPA#5	35.3	5.03	2.89	0.4	0.75	2.18	1.11	2.58	1.339626814

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Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
753	4/4/2003	EPA	S2532 10C EPA#1	32.2	6.17	2.92	1.74	0.74	0.58	1.03	2.32	1.268266534
754	4/4/2003	EPA	S2533 10C EPA#2	34.5	1.71	3.36	1.13	0.89	2.54	1.27	3.67	1.550806242
755	4/4/2003	EPA	S2534 10C EPA#3	32.6	-3.34	2	1.81	0.56	1.54	0.78	3.35	0.960208311
756	4/4/2003	EPA	S2535 10C EPA#4	31.1	6	3.97	0.66	1.02	1.51	1.45	2.17	1.772822608
757	4/4/2003	EPA	S2536 10C EPA#5	30.3	-0.27	3.33	0.33	0.89	1.89	1.29	2.22	1.56722685
758	4/4/2003	EPA	S2537 10D#1 EPA#1	31.6	-1.08	2.16	2.44	0.6	0.36	0.82	2.8	1.016070864
759	4/4/2003	EPA	S2538 10D#1 EPA#2	29.8	6.57	2.69	1.92	0.7	2	0.98	3.92	1.204325537
760	4/4/2003	EPA	S2539 10D#1 EPA#3	34.5	1.99	3.3	1.56	0.9	2.96	1.26	4.52	1.548418548
761	4/4/2003	EPA	S2540 10D#1 EPA#4	33.6	-1.67	3.02	1.24	0.84	3.83	1.21	5.07	1.472990156
762	4/4/2003	EPA	S2541 10D#1 EPA#5	34.3	-2.79	2.85	1.38	0.79	1.75	1.15	3.13	1.395206078
763	4/4/2003	EPA	S2542 9C EPA#1	28.6	2.55	2.98	0.8	0.79	1.44	1.14	2.24	1.386975126
764	4/4/2003	EPA	S2543 9C EPA#2	27.7	2.13	2.5	0.01	0.67	2.83	1.02	2.84	1.220368797
765	4/4/2003	EPA	S2544 9C EPA#3	31.2	5.35	3.98	1.4	1.01	1.07	1.45	2.47	1.767088
766	4/4/2003	EPA	S2545 9C EPA#4	29.8	4.59	2.86	0.16	0.78	4.1	1.13	4.26	1.373062271
767	4/4/2003	EPA	S2546 9C EPA#5	32.6	0.09	3.5	1.81	0.93	1.58	1.31	3.39	1.606549097
768	4/4/2003	EPA	S2547 10D#3 EPA#1	34.6	1.85	2.04	1.65	0.55	1.47	0.77	3.12	0.946255779
769	4/4/2003	EPA	S2548 10D#3 EPA#2	34.8	5.31	2.57	1.91	0.68	0.3	0.94	2.21	1.160172401
770	4/4/2003	EPA	S2549 10D#3 EPA#3	34.2	4.35	1.83	0.9	0.48	2.12	0.69	3.02	0.840535544
771	4/4/2003	EPA	S2550 10D#3 EPA#4	33.4	-0.07	2.59	1.78	0.69	1.69	0.97	3.47	1.190378091
772	4/4/2003	EPA	S2551 10D#3 EPA#5	35.7	4.8	3.24	1.45	0.86	0.62	1.2	2.07	1.476346843
773	4/10/2003	background	bkg041003	7.5	1.1	2.8	-0.45	0.76	-0.08	1.13	-0.53	1.361800279
774	4/10/2003	soil standard	soilstd041003	36.9	0.53	2.74	4.78	0.74	3.14	0.99	7.92	1.236001618
775	4/10/2003	Pre EPA	S2552 9D/9C Pre EPA #1	32.5	5.59	3.13	1.63	0.79	-0.78	1.08	0.85	1.338095662
776	4/10/2003	Pre EPA	S2553 9D/9C Pre EPA #2	29.4	3.53	3.59	-0.51	0.97	4.48	1.49	3.97	1.777920133

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Summary of Lakeshore East Site Samples Through April 11, 2003												
Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
777	4/10/2003	Pre EPA	S2554 9D/9C Pre EPA #3	26.4	5.77	3.27	3.02	0.85	0.93	1.15	3.95	1.430034965
778	4/10/2003	Pre EPA	S2555 9D/9C Pre EPA #4	33.6	1.52	3.07	1.83	0.83	2.51	1.18	4.34	1.442671134
779	4/10/2003	Pre EPA	S2556 9D/9C Pre EPA #5	33.2	3.21	3.05	1.21	0.8	1.25	1.12	2.46	1.376372043
780	4/10/2003	Pre EPA	S2557 9D/9C Pre EPA #6	40.3	-1.12	3.48	1.46	0.95	0.2	1.35	1.66	1.650757402
781	4/10/2003	Pre EPA	S2558 9D/9C Pre EPA #7	39.7	2.15	3.76	2.4	1.01	0.99	1.39	3.39	1.718196729
782	4/11/2003	background	bkg041103	7.5	-1.94	1.94	0.49	0.55	0.05	0.8	0.54	0.970824392
783	4/11/2003	soil standard	soilst041103	36.9	0.16	2.39	3.86	0.65	4.42	0.9	8.28	1.110180166
784	4/11/2003	EPA	S2559 9D/9C NE EPA#1	26.7	1.64	3.4	1.53	0.9	0.08	1.26	1.61	1.548418548
785	4/11/2003	EPA	S2560 9D/9C NE EPA#2	27.8	5.16	3.55	0.57	0.91	1.64	1.32	2.21	1.603277892
786	4/11/2003	EPA	S2561 9D/9C NE EPA#3	27.4	3.87	2.52	0.97	0.66	0.44	0.94	1.41	1.148564321
787	4/11/2003	EPA	S2562 9D/9C NE EPA#4	27.2	0.63	2.32	1	0.63	1.43	0.9	2.43	1.098590005
788	4/11/2003	EPA	S2563 9D/9C NE EPA#5	28.1	-0.14	2.45	1.79	0.66	0.66	0.93	2.45	1.140394669
789	4/11/2003	EPA	S2564 9D/9C SE EPA#1	29.6	-2.49	2.59	2.51	0.71	1.17	0.98	3.68	1.210165278
790	4/11/2003	EPA	S2565 9D/9C SE EPA#2	32.2	7.02	2.97	1.68	0.78	1.92	1.1	3.6	1.348480626
791	4/11/2003	EPA	S2566 9D/9C SE EPA#3	32.6	3.02	2.17	0.85	0.57	3.75	0.84	4.6	1.015135459
792	4/11/2003	EPA	S2567 9D/9C SE EPA#4	30.7	-0.4	3.59	0.69	0.96	3.1	1.42	3.79	1.714059509
793	4/11/2003	EPA	S2568 9D/9C SE EPA#5	30.3	6.38	2.53	2.59	0.65	0.69	0.9	3.28	1.110180166
794	4/11/2003	EPA	S2569 9D/9C NW EPA#1	28.6	-2.08	2.37	1.67	0.64	1.28	0.91	2.95	1.112519663
795	4/11/2003	EPA	S2570 9D/9C NW EPA#2	26.7	5.28	2.68	0.39	0.7	2.03	1.02	2.42	1.237093368

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Summary of Lakeshore East Site Samples Through April 11, 2003

Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
796	4/11/2003	EPA	S2571 9D/9C NW EPA#3	26.4	-0.75	1.93	2.45	0.52	-0.91	0.72	1.54	0.888144132
797	4/11/2003	EPA	S2572 9D/9C NW EPA#4	26.6	5.88	2.55	0.62	0.67	2.84	0.97	3.46	1.17889779
798	4/11/2003	EPA	S2573 9D/9C NW EPA#5	25.7	-1.94	2.98	1.34	0.81	1.47	1.17	2.81	1.423024947
799	4/11/2003	EPA	S2574 9D/9C SW EPA#1	21.6	0.93	3.74	1.26	1.04	0.65	1.44	1.91	1.776288265
800	4/11/2003	EPA	S2575 9D/9C SW EPA#2	24.4	4.55	3.34	0.04	0.89	3.31	1.31	3.35	1.583729775
801	4/11/2003	EPA	S2576 9D/9C SW EPA#3	22.3	2.01	2.79	0.33	0.74	2.32	1.1	2.65	1.325745074
802	4/11/2003	EPA	S2577 9D/9C SW EPA#4	25.3	0.5	2.57	2.11	0.71	1.97	0.99	4.08	1.218277472
803	4/11/2003	EPA	S2578 9D/9C SW EPA#5	24.5	7.41	3.18	1.22	0.82	-0.02	1.14	1.2	1.404279175
804	4/11/2003	EPA	S2579 10D#2 EPA#1	28.8	0.83	2.64	0.49	0.71	1.39	1.04	1.88	1.259245806
805	4/11/2003	EPA	S2580 10D#2 EPA#2	28.7	0.69	2.87	1.65	0.79	1.6	1.11	3.25	1.36242431
806	4/11/2003	EPA	S2581 10D#2 EPA#3	28.7	2.95	3.16	0.95	0.84	1.28	1.2	2.23	1.464786674
807	4/11/2003	EPA	S2582 10D#2 EPA#4	30.6	8.08	3.72	1	0.93	-0.87	1.29	0.13	1.590282994
808	4/11/2003	EPA	S2583 10D#2 EPA#5	30.6	0.85	2.36	1.72	0.65	0.25	0.89	1.97	1.102088926

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Daily Report for 6/30/03 - 7/2/03 Misc. Samples												
Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group			Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
810	6/30/03	background	bkg063003	20	0.82	3.07	0.25	0.71	-1.28	1	-1.01	1.228417547
811	6/30/03	soil standard	soilst063003	38.9	7.14	6.69	3.44	1.52	2.18	1.98	6.82	2.504096644
812	6/30/03	soil standard	soilst063003(2)	38.9	4.93	2.24	3.73	0.6	3.11	0.63	6.84	1.024156191
813	6/30/03	background	bkg063003	7.5	-0.08	1.42	-0.04	0.4	-0.37	0.59	-0.41	0.712811335
814	7/1/03	background	bkg070103	7.5	0.77	1.2	-0.05	0.33	-0.03	0.5	-0.08	0.699082632
815	7/1/03	soil standard	soilst070103	38.9	5.79	3.28	4.96	0.65	2.16	1.15	7.12	1.430034965
816	7/2/03	background	bkg070203	7.5	0.1	1.7	-0.89	0.47	0.61	0.73	-0.28	0.868216563
817	7/2/03	soil standard	soilst070203	38.9	4.91	3.58	5.43	0.95	1.65	1.28	7.08	1.584020076
818	7/2/03	EPA	92584 C-218 (73) EPA #1	32.5	4.82	2.54	0.62	0.67	0.48	0.98	1.11	1.187139419
819	7/2/03	EPA	92585 C-218 (73) EPA #2	32.7	0.62	3.05	0.67	0.83	0.32	1.21	0.98	1.467310465
820	7/2/03	EPA	92586 C-218 (73) EPA #3	31.9	6.44	2.68	-1.64	0.68	3.73	1.1	2.06	1.283213053
821	7/2/03	EPA	92587 C-218 (73) EPA #4	33.6	0.65	2.68	0.15	0.75	1.67	1.1	1.82	1.331352896
822	7/2/03	EPA	92588 C-218 (73) EPA #5	32.4	5.08	4.35	0.04	1.14	1.19	1.71	1.23	2.055164227
823	7/2/03	exclusion zone	82589 C-201 (31)	29.5	10.01	14.77	60.98	3.8	2.21	4.49	63.19	5.862184988
824	7/2/03	Pre EPA	82590 C-201 (31)	32.3	1.69	3.86	0.41	1.05	2.03	1.58	2.44	1.897078699
825	7/2/03	exclusion zone	82601 C-201 (31)#2	25.8	6.84	7.01	26	1.84	9.01	2.35	35.01	2.964844032
826	7/2/03	Pre EPA	82602 C-201 (31)#2	32.4	12.55	3.3	-0.43	0.79	2.34	1.21	1.91	1.445080552

Nutranl Gamma Spec Report- Lakeshore East Site							221 North Columbus Drive, Chicago, IL						
Daily Report for 7/7/03 - 7/8/03													
Sample ID	Sample Date	Sample Group	Description	Weight	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty	
827	7/7/03	background	bkg070703	7.5	3.28	1.53	-0.82	0.4	0.48	0.61	-0.18	0.728451849	
828	7/7/03	soil standard	soilstd070703	38.9	3.1	2.49	4.87	0.68	1.65	0.91	6.72	1.124144119	
829	7/8/03	background	bkg070803	7.5	1.38	1.68	-0.87	0.46	0.18	0.7	-0.49	0.837615684	
830	7/8/03	soil standard	soilstd070803	38.9	1.1	3.8	4.53	0.98	2.17	1.33	8.7	1.652059321	
831	7/8/03	EPA	S2583 C-201(31)#1 EPA #1	31.4	3.08	2.15	2.11	0.57	0.31	0.79	2.42	0.97416831	
832	7/8/03	EPA	S2584 C-201(31)#1 EPA #2	30.7	-3.8	2.3	2.69	0.65	1.65	0.8	4.34	1.110180185	
833	7/8/03	EPA	S2595 C-201(31)#1 EPA #3	29.5	3.68	2.72	1.59	0.74	1.12	1.04	2.71	1.276401191	
834	7/8/03	EPA	S2586 C-201(31)#1 EPA #4	28.8	-0.44	2.79	1.48	0.78	1.24	1.1	2.72	1.348480626	
835	7/8/03	EPA	S2597 C-201(31)#1 EPA #5	29.9	8.41	2.69	1.8	0.7	1.78	1	3.38	1.220655582	
836	7/8/03	EPA	S2598 C-201(31)#2 EPA #1	29.8	-1.81	2.48	1.35	0.88	1.7	1	3.05	1.208287317	
837	7/8/03	EPA	S2599 C-201(31)#2 EPA #2	28.8	2.65	2.28	0.78	0.81	1.41	0.88	2.18	1.070747403	
838	7/8/03	EPA	S2600 C-201(31)#2 EPA #3	28.5	6.19	2.1	0.68	0.54	0.99	0.78	1.65	0.948683298	
839	7/8/03	EPA	S2601 C-201(31)#2 EPA #4	29.3	3.55	2.68	-0.29	0.71	3.39	1.08	3.1	1.300845879	
840	7/8/03	EPA	S2602 C-201(31)#2 EPA #5	28.3	2.61	2.31	1.08	0.61	1.41	0.9	2.47	1.087244223	

Nutranl Gamma Spec Report- Lakeshore East Site

221 North Columbus Drive, Chicago, IL

Daily Report for 8/15/03 - 8/26/03

Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group			Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
841	8/15/03	background	bkg081503	7.5	1.42	2.04	0.28	0.55	-1.2	0.79	-0.92	0.962600844
842	8/15/03	soil standard	soilstd081503	36.9	-1.58	1.87	5.47	0.46	1.18	0.62	6.65	0.772010363
843	8/15/03	Fill Soil	S2603 Import sand WD #1	35.5	3.31	2.22	-0.26	0.58	0.33	0.88	0.07	1.05384497
844	8/15/03	Fill Soil	S2604 Import sand WD #2	35.3	1.61	1.59	-0.4	0.43	0.74	0.65	0.34	0.778358711
845	8/15/03	Fill Soil	S2605 Import sand WD #3	35.7	3.02	3	-0.23	0.8	-0.66	1.14	-0.89	1.392695229
846	8/15/03	Fill Soil	S2606 Import sand WD #4	36.1	3.27	2.46	0.66	0.66	0.24	0.95	0.9	1.156762724
847	8/15/03	Fill Soil	S2607 Import sand WD #5	36	3.06	1.97	0.82	0.52	0.68	0.77	1.3	0.929139387
848	8/15/03	Fill Soil	S2608 Import sand WD QC	35.3	-0.64	2.08	0.05	0.57	0.36	0.84	0.41	1.015135469
849	8/15/03	exclusion zone	S2609 12C#1	22.5	-5.48	11.88	74.17	3.12	14.45	3.89	88.62	4.98663213
850	8/15/03	exclusion zone	S2610 12C#2	31.4	-0.43	2.4	2.6	0.67	3.09	0.95	5.69	1.162497312
851	8/15/03	exclusion zone	S2611 12C#3	15.3	1.71	4.08	1.81	1.09	-0.33	1.53	1.48	1.878563281
852	8/26/03	background	bkg082603	7.5	2.62	1.84	0.29	0.5	-0.89	0.72	-0.6	0.87658428
853	8/26/03	soil standard	soilstd082603	36.9	6.18	3.56	4.98	0.94	1.73	1.24	6.71	1.556020565
854	8/26/03	Pre EPA	S2612 12C#1	27.3	8.18	2.73	1.37	0.7	2.55	1.02	3.92	1.237093368
855	8/26/03	Pre EPA	S2613 12C#2	24.6	6.57	3.16	0.94	0.82	1.37	1.18	2.31	1.436941196
856	8/26/03	Pre EPA	S2614 12C#3	23.9	2.56	2.62	1.84	0.71	3.34	1.02	5.18	1.242779144

Nutranl Gamma Spec Report- Lakeshore East Site								221 North Columbus Drive, Chicago, IL				
Daily Report for 8/27/03												
Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group			Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
857	8/27/03	background	bkg082703	7.5	-1.95	1.88	0.26	0.54	-0.58	0.8	-0.32	0.985194281
858	8/27/03	soil standard	soilstd082703	36.9	8.42	3.04	4.38	0.79	1.85	1.07	6.23	1.330037593
859	8/27/03	EPA	S2615 12C#1 EPA#1	29.5	1.6	2.06	0.63	0.58	3.01	0.83	3.64	1.00124922
860	8/27/03	EPA	S2616 12C#1 EPA#2	28.7	4.21	1.93	1.77	0.51	1.05	0.72	2.82	0.88232647
861	8/27/03	EPA	S2617 12C#1 EPA#3	28.4	2.59	2.58	1.42	0.68	0.95	0.97	2.37	1.18460984
862	8/27/03	EPA	S2618 12C#1 EPA#4	30.3	3.98	2.49	1.56	0.65	1.07	0.92	2.63	1.126454815
863	8/27/03	EPA	S2619 12C#1 EPA#5	25.5	-2.24	2.26	1.83	0.63	1.14	0.91	2.97	1.106797181
864	8/27/03	EPA	S2620 12C#2 EPA#1	35.3	3.42	2.14	0.63	0.58	3.19	0.85	3.82	1.029028888
865	8/27/03	EPA	S2621 12C#2 EPA#2	37.2	3.67	3.23	1.92	0.86	2.41	1.23	4.33	1.500833102
866	8/27/03	EPA	S2622 12C#2 EPA#3	35.5	2.69	3.14	3	0.82	0.3	1.12	3.3	1.388092216
867	8/27/03	EPA	S2623 12C#2 EPA#4	37.9	4.36	2.61	1.09	0.89	2.49	1	3.58	1.214948559
868	8/27/03	EPA	S2624 12C#2 EPA#5	38.1	4.3	2.37	1.11	0.62	2.78	0.91	3.89	1.101135777
869	8/27/03	EPA	S2625 12C#3 EPA#1	23.7	-1.73	2.32	1.98	0.65	1.46	0.94	3.44	1.142847321
870	8/27/03	EPA	S2626 12C#3 EPA#2	22.5	4.25	2.11	0.51	0.55	1.38	0.82	1.89	0.987370245
871	8/27/03	EPA	S2627 12C#3 EPA#3	22.3	6.08	2.58	-0.07	0.68	2.85	1	2.78	1.198165284
872	8/27/03	EPA	S2628 12C#3 EPA#4	23.5	1.27	3.25	0.42	0.87	2.54	1.29	2.96	1.555956298
873	8/27/03	EPA	S2629 12C#3 EPA#5	22.8	-0.24	3.1	1.79	0.86	1.74	1.21	3.53	1.484488443

Nutrahl Gamma Spec Report- Lakeshore East Site								221 North Columbus Drive, Chicago, IL				
Daily Report for 10/29/03 & 10/30/03												
Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group			Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
874	10/29/03	background	bkg102903	7.5	1.52	1.55	-0.19	0.42	-0.49	0.63	-0.68	0.757165768
875	10/29/03	soil standard	soilstd102903	36.9	4.27	3.85	4.92	1.02	2.32	1.4	7.24	1.732168274
876	10/29/03	exclusion zone	S2630 13D#1	31.4	45.62	18.83	66.75	4.7	10.32	5.72	77.07	7.403268548
877	10/29/03	exclusion zone	S2631 13D#2	33.6	32.41	22.49	66.5	5.68	13.92	6.96	80.42	8.983540505
878	10/29/03	exclusion zone	S2632 13D#3	32.1	17.99	8.71	21.09	2.23	7.31	2.87	28.4	3.634528855
879	10/29/03	exclusion zone	S2633 13D#4	27.7	1.75	19.25	75.82	5.01	9.69	6.05	85.51	7.855100254
880	10/30/03	soil standard	soilstd103003	36.9	3.37	2.93	3.95	0.78	3.34	1.08	7.29	1.332216199
881	10/30/03	background	bkg103003	7.5	4.03	1.69	-0.36	0.45	-0.38	0.68	-0.74	0.815414005
882	10/30/03	fill soil	S2634 Fill Soil (2) #1	32.6	3.85	2.71	1.63	0.72	-0.47	1.02	1.16	1.248519123
883	10/30/03	fill soil	S2635 Fill Soil (2) #2	38.8	-2.58	3.7	2.62	1.05	-1.62	1.43	1	1.774091317
884	10/30/03	fill soil	S2636 Fill Soil (2) #3	34.9	8.38	3.2	0.66	0.84	1.44	1.18	2.1	1.448447445
885	10/30/03	fill soil	S2637 Fill Soil (2) #4	36.8	-0.96	2.86	1.21	0.77	0.25	1.12	1.46	1.359154149
886	10/30/03	fill soil	S2638 Fill Soil (2) #5	38.6	6.78	3.36	-0.44	0.88	1.76	1.32	1.32	1.586442561
887	10/30/03	fill soil	S2639 Fill Soil (2) #6	37.6	6.77	3.19	0.76	0.82	0.45	1.18	1.21	1.436941198
888	10/30/03	fill soil	S2640 Fill Soil (2) #7	38.7	5.73	2.97	0.01	0.79	2.45	1.17	2.46	1.411738519
889	10/30/03	fill soil	S2641 Fill Soil (2) #8	38.7	-1.43	2.29	1.22	0.63	0.41	0.9	1.63	1.098590005
890	10/30/03	fill soil	S2642 Fill Soil (2) #9	38.8	1.01	3.32	0.43	0.9	2.34	1.33	2.77	1.605895389
891	10/30/03	fill soil	S2643 Fill Soil (2) #10	37.6	1.04	3.38	-0.08	0.94	3.61	1.41	3.53	1.694609099
892	10/30/03	fill soil	S2644 Fill Soil (2) QC	39.6	2.98	3.96	0.04	1.1	1.2	1.57	1.24	1.917002869
893	10/30/03	Special GAH	S2645 CM#1	24.2	2.84	2.04	0.75	0.54	0.41	0.78	1.16	0.948683296
894	10/30/03	Special GAH	S2646 CM#2	35.2	3.55	2.28	1.35	0.61	1.54	0.86	2.89	1.054371851
895	10/30/03	Special GAH	S2647 CM#3	35.6	1.05	2.7	2.34	0.74	2.94	1.08	5.28	1.292748009
896	10/30/03	Special GAH	S2648 CM#4	31.6	5.86	2.46	0.19	0.63	2.57	0.95	2.76	1.139912277
897	10/30/03	Special GAH	S2649 CM#5	30.5	8.29	3.25	2.49	0.83	1.58	1.16	4.07	1.426359001
898	10/30/03	Special GAH	S2650 CM#6	26.7	2.67	2.1	1.97	0.56	1.11	0.8	3.08	0.978524449
899	10/30/03	Special GAH	S2651 CM#7	23.6	2.2	2.45	3.31	0.68	-0.28	0.89	3.05	1.108016245
900	10/30/03	Special GAH	S2652 CM#8	35.5	2.94	2.68	0.6	0.71	1.34	1.04	1.94	1.259245806
901	10/30/03	Special GAH	S2653 CM#9	27.7	2.04	2.01	0.65	0.54	2.01	0.8	2.66	0.995194281
902	10/30/03	Special GAH	S2654 CM#10	28.4	4.82	1.93	-0.08	0.51	2.31	0.76	2.23	0.915259526

Nutranl Gamma Spec Report- Lakeshore East Site

221 North Columbus Drive, Chicago, IL

Daily Report for 11/11/03

Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
903	11/11/03	soil standard	soiletd111103	36.9	4.91	3.52	4.02	1.08	3.52	1.39	7.54	1.748056083
904	11/11/03	background	bkg111103	7.5	-2.75	1.99	-0.52	0.84	0.83	0.93	0.31	1.126937554
905	11/11/03	Pre EPA	S2655 13D Pre EPA #1	31.5	0.2	4.18	2.44	1.28	3.31	1.72	5.75	2.13213508
906	11/11/03	Pre EPA	S2656 13D Pre EPA #2	30.7	0.42	2.73	2.93	0.88	-0.02	1.09	2.91	1.388416384
907	11/11/03	Pre EPA	S2657 13D Pre EPA #3	30.4	0.53	2.96	0.35	0.91	1.02	1.28	1.37	1.570509471
908	11/11/03	Pre EPA	S2658 C.2-3 Calsson Pre-EPA	32.6	3.23	3.24	-0.01	1	1.54	1.39	1.53	1.712337584
909	11/11/03	EPA	S2659 C.2-3 Calsson EPA#1	38.4	1.98	2.39	0.96	0.74	1.53	0.97	2.49	1.220040683
910	11/11/03	EPA	S2660 C.2-3 Calsson EPA#2	37.4	3.99	2.82	1.44	0.85	0.48	1.1	1.9	1.390143877
911	11/11/03	EPA	S2661 C.2-3 Calsson EPA#3	36.7	2.78	2.73	0.13	0.85	1.31	1.16	1.44	1.43808901
912	11/11/03	EPA	S2662 C.2-3 Calsson EPA#4	40.5	-0.3	1.7	2.54	0.53	0.2	0.7	2.74	0.878009112
913	11/11/03	EPA	S2663 C.2-3 Calsson EPA#5	37.6	0.87	3.29	-0.22	1.04	2.1	1.45	1.88	1.784404683
914	11/11/03	EPA	S2664 13D East EPA#1	31.6	-3.43	2.14	2.24	0.68	2.31	0.92	4.55	1.144027972
915	11/11/03	EPA	S2665 13D East EPA#2	31.3	-2.37	2.59	3.06	0.82	-0.14	1.06	2.92	1.340149245
916	11/11/03	EPA	S2666 13D East EPA#3	27.8	0.3	2.92	1.08	0.92	2.3	1.24	3.38	1.544020725
917	11/11/03	EPA	S2667 13D East EPA#4	33.6	-2.28	2.54	1.59	0.8	2.15	1.07	3.74	1.336001497
918	11/11/03	EPA	S2668 13D East EPA#5	33.2	-3.57	1.78	2.98	0.57	0.51	0.74	3.49	0.934077085
919	11/11/03	EPA	S2669 13D West EPA#1	27.6	-5.38	3.61	1.54	1.17	0.82	1.57	2.38	1.858009193
920	11/11/03	EPA	S2670 13D West EPA#2	28.5	0.75	2.11	0.98	0.85	2.59	0.89	3.57	1.102088926
921	11/11/03	EPA	S2671 13D West EPA#3	29.8	0.38	3.86	2.06	1.18	-0.74	1.52	1.32	1.824266084
922	11/11/03	EPA	S2672 13D West EPA#4	27.7	1.81	2.07	1.34	0.84	1.25	0.84	2.59	1.056030303
923	11/11/03	EPA	S2673 13D West EPA#5	28.4	1.71	2.45	1.32	0.77	1.03	1.01	2.35	1.270039369

Notes:

- 1) The sample indicated as "background" is an empty vial inserted into the instrument in the same manner as a soil sample. The empty vial is used to verify that absence of background influences (positive or negative) on the instrumentation. Acceptable results for the background sample are ± 1.0 pCi/g.
- 2) The sample indicated as "soil standard" is a soil sample in the range of the USEPA cleanup level of 7.1 pCi/g total radium. The soil sample was from one of the initial remedial projects in the Streeterville area. It was originally used as a cross-check between laboratories during the initial projects and is now used as daily consistency sample to show repeatability of the instrumentation.

ii. **Imported Fill Soil Analyses**

Lakeshore East Project - BORROW SOIL STOCKPILE SAMPLING

Offsite Fill

Using USEPA approved procedure SOP 214 *Workplan for Investigation and Removal of Radiologically Impacted Soil* (Revised September 30, 2002)

Excavation Area: Imported Sand - Wick Drains

Date Sampled: 7/29/03

Number of Samples
Required Per SOP 214:
6

PILE # : West Side of Site

Est. Volume of Lift in Cubic Yards: 500

Sample #	Total Radium in pCi/g	QC Sample Dup. Tot. Rad. in pCi/g	E lab uncertainty	S ₁ Std. Dev. for the analyses of the duplicate sample	S _{dup} Std. Dev. of the duplicate sampling & measurement
S2603 Import Sand WD #1	0.07				
S2604 Import Sand WD #2	0.34				
S2605 Import Sand WD #3	-0.89				
S2606 Import Sand WD #4	0.90				
S2607 Import Sand WD #5	1.30				
S2608 Import Sand WD QC		0.40	1.01	0.505	
Number of Samples (n)	5	$S_{dup} = \sqrt{(S_1^2 + S_2^2)}$			0.54
Average (Mean of the sample population) (X bar)	0.34				

Average of samples is <7.1 pCi/g. Proceed with Confidence Level Check described in SOP-214, Paragraph 6.12

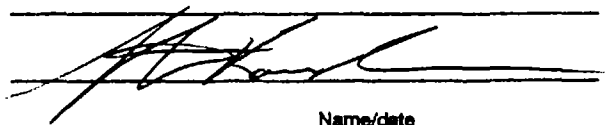
Standard Deviation of sample population (S ₁)	0.19	T* value
U _α (True Mean) = (X bar) + (t * (S ₁ /sqrt(n)))	0.53	2.132
Where T* is a statistic used for small sample tests of hypotheses (the Student Distribution), from SOP No. KMS-102, Attachment 10.6		
Release Criteria	7.1	
U _α < Release Criteria?	SAMPLES TESTED MEET 95% CONFIDENCE LEVEL - LIFT IS RADIOLOGICALLY ACCEPTABLE FOR USE AS ONSITE BACKFILL PER SOP-214	

Check if QC Sample Dup. is within 3 Standard Deviations (3 S_{dup}) of the mean of the sample population, per SOP 214, paragraph 12.1

3 x S _{dup} =	1.62		
Mean + 3 S _{dup} =	2.0	QC < (Mean + 3S _{dup})?	O.K.
Mean - 3 S _{dup} =	-1.3	QC > (Mean - 3S _{dup})?	O.K.

APPROVED: FIELD TEAM LEADER:

APPROVED: PROJECT MANAGER:


Name/date

Lakeshore East Project - BORROW SOIL STOCKPILE SAMPLING

Offsite Fill

Using USEPA approved procedure SOP 214 *Workplan for Investigation and Removal of Radiologically Impacted Soil* (Revised September 30, 2002)

Excavation Area: Fill Soil Batch #2

Date Sampled: 10/15/03

Number of Samples
Required Per SOP 214:
10

PILE # : South Side of Site

Est. Volume of Lift in Cubic Yards: 10000

Sample #	Total Radium in pCi/g	QC Sample Dup. Tot. Rad. in pCi/g	E lab uncertainty	S ₂ Std. Dev. for the analyses of the duplicate sample	S _{dup} Std. Dev. of the duplicate sampling & measurement
S2634 Fill Soil (2) #1	1.16				
S2635 Fill Soil (2) #2	1.00				
S2636 Fill Soil (2) #3	2.10				
S2637 Fill Soil (2) #4	1.46				
S2639 Fill Soil (2) #5	1.32				
S2639 Fill Soil (2) #6	1.21				
S2640 Fill Soil (2) #7	2.46				
S2641 Fill Soil (2) #8	1.63				
S2642 Fill Soil (2) #9	2.77				
S2643 Fill Soil (2) #10	3.53				
S2644 Fill Soil (2) QC		1.24	1.92	0.96	
Number of Samples (n)	10			S _{dup} = sqrt (S ₁ ² + S ₂ ²) =	
Average (Mean of the sample population) (X bar)	1.86				0.97

Average of samples is <7.1 pCi/g, Proceed with Confidence Level Check described in SOP-214, Paragraph 6.12

Standard Deviation of sample population (S ₁)	0.11	
U _α (True Mean) = (X bar) + (t * (S ₁ /sqrt(n)))	1.88	t value 0
Where "t" is a statistic used for small sample tests of hypotheses (the Student Distribution), from SOP No. KMS-102, Attachment 10.6		
Release Criteria	7.1	
U _α < Release Criteria?	SAMPLES TESTED MEET 95% CONFIDENCE LEVEL - LIFT IS RADIOLOGICALLY ACCEPTABLE FOR USE AS ONSITE BACKFILL PER SOP-214	

Check if QC Sample Dup. is within 3 Standard Deviations (3 S_{dup}) of the mean of the sample population, per SOP 214, paragraph 12.1

3 x S _{dup} =	2.90		
Mean + 3 S _{dup} =	4.8	QC < (Mean + 3S _{dup})?	O.K.
Mean - 3 S _{dup} =	-1.0	QC > (Mean - 3S _{dup})?	O.K.

APPROVED: FIELD TEAM LEADER:

APPROVED: PROJECT MANAGER:



Name/date

Nutranl Gamma Spec Report- Lakeshore East Site								221 North Columbus Drive, Chicago, IL				
Fill Soil Stockpile - Batch #2								10,000 cubic yards				
Sample	Sample	Sample	Description	Weight	U-238	U-238	Th-232	Th-232	Ra-226	Ra-226	Total Radium	Total Radium
ID	Date	Group			Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty	Activity	Uncertainty
882	10/30/03	fill soil	S2634 Fill Soil (2) #1	32.6	3.85	2.71	1.63	0.72	-0.47	1.02	1.16	1.248519123
883	10/30/03	fill soil	S2635 Fill Soil (2) #2	38.8	-2.56	3.7	2.62	1.05	-1.62	1.43	1	1.774091317
884	10/30/03	fill soil	S2636 Fill Soil (2) #3	34.9	8.38	3.2	0.66	0.84	1.44	1.18	2.1	1.448447445
885	10/30/03	fill soil	S2637 Fill Soil (2) #4	36.8	-0.96	2.86	1.21	0.77	0.25	1.12	1.46	1.359154149
886	10/30/03	fill soil	S2638 Fill Soil (2) #5	36.6	6.78	3.36	-0.44	0.88	1.76	1.32	1.32	1.588442561
887	10/30/03	fill soil	S2639 Fill Soil (2) #6	37.6	6.77	3.19	0.76	0.82	0.45	1.18	1.21	1.436941196
888	10/30/03	fill soil	S2640 Fill Soil (2) #7	38.7	5.73	2.97	0.01	0.79	2.45	1.17	2.46	1.411736519
889	10/30/03	fill soil	S2641 Fill Soil (2) #8	38.7	-1.43	2.29	1.22	0.63	0.41	0.9	1.63	1.098590005
890	10/30/03	fill soil	S2642 Fill Soil (2) #9	38.8	1.01	3.32	0.43	0.9	2.34	1.33	2.77	1.605885389
891	10/30/03	fill soil	S2643 Fill Soil (2) #10	37.6	1.04	3.38	-0.08	0.94	3.61	1.41	3.53	1.694609099
892	10/30/03	fill soil	S2644 Fill Soil (2) QC	39.6	2.98	3.96	0.04	1.1	1.2	1.57	1.24	1.917002669

b. **RSSI Gamma Spectroscopy Analyses**

**HIGH RESOLUTION GAMMA SPECTROSCOPY
RSSI ANALYSIS TOTAL RADIUM (pCi/g)
LAKE SHORE EAST**

RSSI Spectrum File No.	STS Sample No.	Ra-226 ⁽¹⁾	Ra-228 ⁽²⁾	Total Radium
031363	10D#2	41.2	191	232.2
031228	9D South	42.6	36	78.6
031227	9D North	69.4	131	200.4

Notes:

(1) - Pb-214 and Bi-214 average used as surrogate for Ra-226

(2) - Ac-228 measured as surrogate for Ra-228

(3) - ND = below minimum detected activity

Sample Location 10D#2

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RSSI High Resolution Gamma Spectroscopy Analysis

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Quantum Technology

GDR_C Nuclide Activity Summary

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Sample ID: 031363 STS 10D#2 P#1-32193-XC

Sample Size 7.55e+002 g | Spectrum File . . h:\pcaspec\031363.spm
 Sampling Start. 00-00-00 00:00 | Counting Start. 04-07-03 14:48
 Sampling Stop 00-00-00 00:00 | Buildup Time. 0.00e+000 Hrs
 Current Date. 00-00-00 00:00 | Decay Time. 0.00e+000 Hrs

Efficiency File:h:\gdr\eff\500mar.eff | Library File. . . h:\gdr\lib\nuthk.lib
 ID. 500mar | ID. U & Th Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 04-26-02 12:00

Gamma Fraction Limit >= . . . 71.00 % | Decay Limit <= . . . 8.000 Halflives
 Library Energy Tolerance. . . 1.20

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
Bi-214	Average:	4.67e-005 +-5.77e-007	3.32e-001	7 of 10
	609.31	3.80e-005 +-6.78e-007		
	727.17	2.64e-004 +-3.28e-006		
	934.06	3.63e-005 +-6.87e-006		
	1120.30	4.19e-005 +-1.67e-006		
	1238.10	4.41e-005 +-4.78e-006		
	1377.70	3.66e-005 +-6.66e-006		
	1764.50	5.06e-005 +-1.86e-006		
Pb-212	Average:	1.97e-004 +-4.65e-007	1.06e+001	6 of 6
	74.82	2.05e-004 +-3.34e-006		
	77.11	1.58e-004 +-1.57e-006		
	87.30	1.34e-004 +-2.26e-006		
	115.19	1.57e-004 +-3.06e-005		
	238.63	2.05e-004 +-5.10e-007		
	300.09	1.69e-004 +-3.48e-006		
Pb-214	Average:	3.58e-005 +-5.01e-007	4.47e-001	4 of 6
	74.82	3.61e-005 +-1.09e-005		
	87.30	3.61e-005 +-7.40e-006		
	295.21	3.48e-005 +-1.00e-006		
	351.92	3.61e-005 +-5.81e-007		
Th-228	84.37	2.13e-004 +-1.83e-005	1.68e+004	1 of 2
Ac-228	Average:	1.91e-004 +-5.65e-007	6.13e+000	10 of 10
	89.95	3.95e-004 +-5.78e-006		
	93.35	2.09e-004 +-4.94e-006		
	209.28	1.42e-004 +-3.12e-006		
	270.23	1.56e-004 +-3.43e-006		
	327.64	1.55e-004 +-3.53e-006		

	338.32	1.85e-004	+-1.28e-006			
	463.00	1.68e-004	+-2.68e-006			
	794.70	1.63e-004	+-3.07e-006			
	911.07	1.96e-004	+-8.81e-007			
	969.11	2.01e-004	+-1.24e-006			
Ra-226	186.10		I.D.Only	1.40e+007	1 of	1
K-40	1460.80	2.10e-005	+-1.10e-006	1.12e+013	1 of	1

TOTAL: 7.05e-004 uCi/g

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un- Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
51.67	221.93	25928	428	819	33689	2.09	6.852e+002
105.65	442.19	7950	634	1323	71766	1.70	5.884e+001
108.95	455.64	2583	674	1439	70847	1.66	1.851e+001
129.33	538.79	17087	620	1253	78837	1.64	1.070e+002
154.29	640.60	5322	571	1171	68838	1.57	3.149e+001
277.53	1143.38	13017	499	1042	35892	2.04	9.631e+001
288.10	1186.51	1980	492	1063	32173	1.66	1.504e+001
409.57	1681.98	8624	303	601	16624	1.82	8.651e+001
453.26	1860.13	2087	255	522	12548	2.12	2.281e+001
510.79	2094.79	30383	331	591	14855	2.06	3.681e+002
562.66	2306.32	2732	234	475	10829	2.17	3.601e+001
583.34	2390.64	101953	437	634	14825	2.00	1.387e+003
755.60	3093.08	2313	238	499	8387	1.88	3.954e+001
763.61	3125.74	1177	262	559	9654	1.71	2.031e+001
772.63	3162.54	3163	187	368	6802	2.10	5.515e+001
782.37	3202.24	1376	168	344	5113	2.04	2.426e+001
785.80	3216.21	3361	175	347	5171	2.31	5.949e+001
830.75	3399.50	1644	164	340	4047	2.57	3.057e+001
836.03	3421.00	4614	146	265	3682	2.52	8.629e+001
840.51	3439.30	2362	155	313	3669	2.22	4.438e+001
860.85	3522.20	12046	184	310	4246	2.19	2.312e+002
893.81	3656.58	846	128	260	3243	1.85	1.679e+001
904.39	3699.71	1371	182	383	4658	1.80	2.750e+001
965.23	3947.73	12149	154	221	2703	2.52	2.582e+002
988.44	4042.35	404	114	236	2467	1.28	8.771e+000
1065.47	4356.36	631	103	208	2070	2.02	1.465e+001
1079.16	4412.16	1132	105	208	1988	2.01	2.658e+001
1094.89	4476.27	1235	113	226	2171	2.06	2.937e+001
1111.00	4541.96	902	103	206	1960	1.89	2.174e+001
1247.18	5096.98	1002	154	328	2833	2.66	2.677e+001
1496.89	6114.57	1616	98	191	1284	2.46	5.083e+001
1502.34	6136.76	847	91	184	1223	2.25	2.673e+001
1513.74	6183.23	402	85	172	1430	1.86	1.277e+001
1581.63	6459.82	996	109	228	1411	2.71	3.291e+001
1589.07	6490.15	5864	107	156	1111	2.76	1.946e+002
1593.38	6507.70	3449	103	181	1080	2.82	1.147e+002
1621.65	6622.85	2198	102	189	1575	2.56	7.427e+001
1631.59	6663.38	2615	108	205	1361	2.37	8.884e+001
1639.14	6694.13	631	106	223	1510	1.98	2.153e+001
1730.50	7066.30	457	84	172	1215	2.10	1.637e+001

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 RSSI High Resolution Gamma Spectroscopy Analysis
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Quantum Technology
 GDR_C Version 6.0
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Sample ID : 031363 STS 10D#2 P#1-32193-XC

 Sample Size 7.55e+002 g | Spectrum File . . h:\pcaspec\031363.spm
 Sampling Start. 00-00-00 00:00 | Counting Start. 04-07-03 14:48
 Sampling Stop 00-00-00 00:00 | Live Time 3600 Sec
 Current Date. 00-00-00 00:00 | Real Time 0 Sec

Detector #: 1

Energy(keV) = -2.72 + 0.245*Ch + 2.84e-008*Ch^2 + 0.00e+000*Ch^3 00-00-00 00:00

FWHM(keV) = 1.49 + 0.019*En + -2.37e-005*En^2 + 0.00e+000*En^3 04-24-03 09:00
 Where En = Sqrt(Energy in keV)

 Sensitivity 2.00 | Search Start / End. 0 / 8191
Sigma Multiplier. 1.00

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN- CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	51.67	221.94	25928	428	819	33689	2.09	
2	75.08	317.46	60012	784	1616	74020	2.25	a
3	77.38	326.83	65989	654	1272	63258	1.65	b
4	84.78	357.05	7240	620	1293	69199	1.46	c
5	87.39	367.68	32993	515	979	55468	1.92	d
6	90.12	378.83	24451	358	608	35598	1.87	e
7	93.40	392.20	22328	526	1025	60946	1.67	f
8	99.88	418.62	868	694	1464	85479	1.35	g NET < CL
9	105.65	442.19	7950	634	1323	71766	1.70	h
10	108.95	455.64	2583	674	1439	70847	1.66	i
11	115.22	481.22	3760	735	1591	69929	1.58	j
12	129.33	538.79	17087	620	1253	78837	1.64	
13	154.29	640.60	5322	571	1171	68838	1.57	
14	186.19	770.77	7467	511	1036	56441	1.88	
15	209.37	865.31	26409	583	1184	55365	1.84	a
16	216.16	893.04	1123	610	1296	61871	1.42	b NET < CL
17	238.94	985.94	369191	918	1481	69230	1.84	
18	270.36	1114.11	20466	449	904	30209	1.95	a
19	277.53	1143.38	13017	499	1042	35892	2.04	b
20	288.10	1186.51	1980	492	1063	32173	1.66	a
21	295.32	1215.93	12294	353	693	24017	2.08	b
22	300.21	1235.88	19836	410	822	23666	2.03	c
23	328.08	1349.56	15675	357	694	23176	1.83	
24	338.45	1391.87	64821	448	774	25476	1.89	
25	351.96	1446.97	21582	346	654	19696	1.94	
26	409.58	1681.98	8624	303	601	16624	1.82	
27	453.26	1860.13	2087	255	522	12548	2.12	

28	463.10	1900.30	17632	282	515	12761	1.98	
29	510.79	2094.79	30478	331	591	14855	2.06	
30	562.66	2306.32	2732	234	475	10829	2.17	
31	583.34	2390.64	101981	437	634	14825	2.00	
32	609.47	2497.21	14611	260	480	10600	2.04	
33	727.47	2978.37	22114	275	487	9702	2.17	
34	755.60	3093.08	2313	238	499	8387	1.88	a
35	763.61	3125.74	1177	262	559	9654	1.71	b
36	772.63	3162.54	3163	187	368	6802	2.10	
37	782.37	3202.24	1376	168	344	5113	2.04	a
38	785.80	3216.21	3361	175	347	5171	2.31	b
39	795.21	3254.58	11145	210	382	6192	2.04	
40	830.75	3399.50	1644	164	340	4047	2.57	a
41	836.03	3421.00	4614	146	265	3682	2.52	b
42	840.51	3439.30	2362	155	313	3669	2.22	c
43	860.85	3522.20	12046	184	310	4246	2.19	
44	893.81	3656.58	846	128	260	3243	1.85	
45	904.39	3699.71	1371	182	383	4658	1.80	a
46	911.54	3728.85	71140	319	376	4549	2.44	b
47	934.63	3823.00	660	125	256	2900	2.56	
48	958.86	3921.79	258	143	304	3114	1.66	a NET < CL
49	965.23	3947.73	12149	154	221	2703	2.52	b
50	969.33	3964.44	41366	255	330	3504	2.45	c
51	988.44	4042.36	404	114	236	2467	1.28	
52	1065.47	4356.36	631	103	208	2070	2.02	
53	1079.16	4412.16	1132	105	208	1988	2.01	
54	1094.89	4476.27	1235	113	226	2171	2.06	
55	1111.00	4541.96	902	103	206	1960	1.89	
56	1120.93	4582.41	3081	122	227	2275	2.37	
57	1238.86	5063.07	1156	125	260	2123	2.54	a
58	1247.18	5096.98	1002	154	328	2833	2.66	b
59	1378.58	5632.46	603	110	225	2149	2.06	
60	1460.57	5966.57	2218	107	203	1619	2.95	
61	1496.89	6114.57	1616	98	191	1284	2.46	a
62	1502.34	6136.76	847	91	184	1223	2.25	b
63	1513.75	6183.23	402	85	172	1430	1.86	
64	1581.63	6459.82	996	109	228	1411	2.71	a
65	1589.07	6490.15	5864	107	156	1111	2.76	b
66	1593.38	6507.70	3449	103	181	1080	2.82	c
67	1621.65	6622.85	2198	102	189	1575	2.56	
68	1631.59	6663.38	2615	108	205	1361	2.37	a
69	1639.14	6694.13	631	106	223	1510	1.98	b
70	1730.50	7066.30	457	84	172	1215	2.10	
71	1765.61	7209.32	2575	95	168	1157	2.49	

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RSSI High Resolution Gamma Spectroscopy Analysis

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Quantum Technology

GDR_C Background Subtract Results

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Sample ID : 031363 STS 10D#2 P#1-32193-XC

Bkg File:h:\gdr\bkg\nocal.bkg | Counting Start. 04-07-03 14:48

ID:. NOCAL 24 Hour Background | Current Date 00-00-00 00:00

PK#	ENERGY (keV)	FWHM (keV)	OLD NET COUNTS	OLD UN- CERTAINTY	NEW NET COUNTS	NEW UN- CERTAINTY	FLAG
2	75.08	2.25	60012	784	59884	784	
4	84.78	1.46	7240	620	7210	620	
7	93.40	1.67	22328	526	22301	526	
14	186.19	1.88	7467	511	7432	511	
17	238.94	1.84	369191	918	369159	918	
21	295.32	2.08	12294	353	12274	353	
25	351.96	1.94	21582	346	21538	347	
29	510.79	2.06	30478	331	30383	331	
31	583.34	2.00	101981	437	101953	437	
32	609.47	2.04	14611	260	14564	260	
46	911.54	2.44	71140	319	71113	319	
50	969.33	2.45	41366	255	41350	255	
56	1120.93	2.37	3081	122	3062	122	
60	1460.57	2.95	2218	107	2032	107	

Sample Location 9D South

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RSSI High Resolution Gamma Spectroscopy Analysis

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Quantum Technology

GDR_C Nuclide Activity Summary

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Sample ID: 031228 STS P# 1-32193-XC 9D SOUTH

Sample Size 7.90e+002 g | Spectrum File . . H:\PCASPEC\031228.SPM
 Sampling Start. 00-00-00 00:00 | Counting Start. 03-27-03 11:11
 Sampling Stop 00-00-00 00:00 | Buildup Time. 0.00e+000 Hrs
 Current Date. 00-00-00 00:00 | Decay Time. 0.00e+000 Hrs

Efficiency File:h:\gdr\eff\500mar.eff | Library File. . . h:\gdr\lib\nuthk.lib
 ID. 500mar | ID. U & Th Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 04-26-02 12:00

Gamma Fraction Limit >= . . . 71.00 % | Decay Limit <= 8.000 Halflives
 Library Energy Tolerance. . . 1.20

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
Bi-214	Average:	4.63e-005 +-3.88e-007	3.32e-001	8 of 10
	609.31	4.52e-005 +-4.76e-007		
	727.17	4.89e-005 +-1.44e-006		
	768.36	3.91e-005 +-2.62e-006		
	934.06	5.04e-005 +-3.65e-006		
	1120.30	4.62e-005 +-1.15e-006		
	1238.10	4.46e-005 +-2.72e-006		
	1377.70	5.09e-005 +-3.96e-006		
	1764.50	5.40e-005 +-1.34e-006		
Pb-212	Average:	3.49e-005 +-1.95e-007	1.06e+001	5 of 6
	74.82	3.56e-005 +-1.53e-006		
	77.11	3.56e-005 +-7.53e-007		
	87.30	1.86e-005 +-1.03e-006		
	238.63	3.56e-005 +-2.10e-007		
	300.09	3.27e-005 +-1.53e-006		
Pb-214	Average:	3.88e-005 +-3.17e-007	4.47e-001	6 of 6
	74.82	3.89e-005 +-5.03e-006		
	77.11	3.10e-005 +-2.47e-006		
	87.30	3.89e-005 +-3.37e-006		
	241.98	3.89e-005 +-1.20e-006		
	295.21	3.88e-005 +-6.25e-007		
	351.92	3.89e-005 +-3.96e-007		
Th-228	84.37	3.42e-005 +-1.08e-005	1.68e+004	1 of 2
Ac-228	Average:	3.60e-005 +-2.55e-007	6.13e+000	10 of 10
	89.95	6.50e-005 +-2.88e-006		
	93.35	2.47e-005 +-2.67e-006		
	209.28	2.89e-005 +-1.36e-006		

	270.23	3.32e-005	+ -1.73e-006			
	327.64	3.02e-005	+ -1.60e-006			
	338.32	3.54e-005	+ -5.68e-007			
	463.00	3.29e-005	+ -1.30e-006			
	794.70	3.12e-005	+ -1.51e-006			
	911.07	3.67e-005	+ -3.92e-007			
	969.11	3.83e-005	+ -5.60e-007			
Ra-226	186.10		I.D.Only	1.40e+007	1 of	1
Ra-224	240.98	4.05e-005	+ -1.16e-006	8.69e+001	1 of	1
K-40	1460.80	1.24e-005	+ -6.50e-007	1.12e+013	1 of	1

TOTAL: 2.43e-004 uCi/g

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un- Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
51.69	222.04	7881	232	443	9874	2.11	2.080e+002
129.35	538.87	3593	310	626	20605	1.47	2.251e+001
277.49	1143.22	2662	262	552	9996	1.80	1.969e+001
409.50	1681.69	1598	143	283	4211	1.90	1.603e+001
510.77	2094.71	6463	164	300	3831	2.04	7.830e+001
562.76	2306.74	681	116	234	2641	1.68	8.977e+000
583.37	2390.79	20465	196	281	3492	1.95	2.784e+002
665.71	2726.56	456	101	203	2075	1.70	6.968e+000
755.53	3092.81	553	92	185	1712	2.08	9.453e+000
772.54	3162.16	1003	93	183	1501	2.72	1.749e+001
786.10	3217.44	766	97	194	1740	2.29	1.356e+001
806.11	3299.03	466	81	163	1228	1.87	8.437e+000
835.97	3420.79	679	78	154	1047	1.64	1.270e+001
840.26	3438.27	895	87	173	1214	3.57	1.681e+001
860.94	3522.56	2338	91	161	1196	2.05	4.488e+001
965.13	3947.34	2553	82	133	832	2.25	5.426e+001
1155.51	4723.35	395	65	130	715	1.92	9.858e+000
1408.67	5755.08	419	62	125	616	2.03	1.248e+001
1496.78	6114.10	340	51	99	452	2.29	1.069e+001
1509.83	6167.28	249	57	116	616	1.15	7.893e+000
1589.05	6490.04	1038	60	108	476	2.41	3.444e+001
1593.27	6507.25	613	52	95	405	2.37	2.039e+001
1621.57	6622.55	486	52	99	438	2.30	1.642e+001
1631.60	6663.41	559	50	94	388	2.17	1.899e+001
1730.69	7067.06	696	47	81	277	2.15	2.493e+001
1848.46	7546.81	446	47	89	313	2.74	1.694e+001

===== RSSI High Resolution Gamma Spectroscopy Analysis =====

Quantum Technology
GDR_C Version 6.0

Sample ID : 031228 STS P# 1-32193-XC 9D SOUTH

Sample Size 7.90e+002 g | Spectrum File . . H:\PCASPEC\031228.SPM
Sampling Start. 00-00-00 00:00 | Counting Start. 03-27-03 11:11
Sampling Stop 00-00-00 00:00 | Live Time 3600 Sec
Current Date. 00-00-00 00:00 | Real Time 0 Sec

Detector #: 1

Energy(keV)= -2.72 + 0.245*Ch + 2.84e-008*Ch^2 + 0.00e+000*Ch^3 00-00-00 00:00

FWHM(keV) = 1.49 + 0.019*En + -2.37e-005*En^2 + 0.00e+000*En^3 04-24-03 09:00
Where En = Sqrt(Energy in keV)

Sensitivity 2.00 | Search Start / End. 0 / 8191
Sigma Multiplier. 1.00 |

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN- CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	51.69	222.04	7881	232	443	9874	2.11	
2	74.99	317.09	13101	376	768	19682	1.72	a
3	77.25	326.31	19612	328	619	17386	1.70	b
4	84.90	357.51	1242	385	812	25154	1.51	c
5	87.47	367.99	7297	246	455	14869	1.66	d
6	90.02	378.39	4205	186	328	10795	1.65	e
7	93.73	393.53	2782	299	604	19371	1.55	f
8	99.72	418.00	249	399	853	24709	1.35	g NET < CL
9	105.67	442.25	351	383	827	20489	1.48	h NET < CL
10	129.35	538.87	3593	310	626	20605	1.47	
11	186.36	771.47	5518	272	535	15820	1.69	
12	209.42	865.52	5637	266	523	14417	1.85	
13	238.79	985.33	66940	396	638	14750	1.92	a
14	241.61	996.84	13290	197	323	6456	2.25	b
15	270.39	1114.25	4546	238	485	8529	1.84	a
16	277.49	1143.22	2662	262	552	9996	1.80	b
17	295.38	1216.17	14353	231	416	7005	1.99	a
18	300.28	1236.16	4023	188	370	6074	2.05	b
19	328.05	1349.44	3194	170	328	5677	1.65	
20	338.46	1391.92	12932	208	361	6248	1.86	
21	352.07	1447.42	24330	247	403	6656	1.89	
22	409.50	1681.69	1598	143	283	4211	1.90	
23	463.12	1900.38	3613	143	270	3515	2.01	
24	510.77	2094.71	6558	164	300	3831	2.04	
25	562.76	2306.74	681	116	234	2641	1.68	
26	583.37	2390.79	20493	196	281	3492	1.95	
27	609.50	2497.36	18184	191	287	3132	2.04	

28	665.71	2726.56	456	101	203	2075	1.70
29	727.54	2978.67	4278	126	225	2324	2.02
30	755.53	3092.81	553	92	185	1712	2.08
31	768.62	3146.17	1392	93	178	1452	1.91 a
32	772.54	3162.16	1003	93	183	1501	2.72 b
33	786.10	3217.44	766	97	194	1740	2.29
34	795.23	3254.69	2232	108	205	1728	1.68
35	806.11	3299.03	466	81	163	1228	1.87
36	835.97	3420.79	679	78	154	1047	1.64 a
37	840.26	3438.27	895	87	173	1214	3.57 b
38	860.94	3522.56	2338	91	161	1196	2.05
39	911.59	3729.06	13921	149	189	1575	2.10
40	934.57	3822.74	959	69	129	772	2.32
41	965.13	3947.34	2553	82	133	832	2.25 a
42	969.36	3964.58	8256	121	168	1102	2.41 b
43	1120.86	4582.13	3547	88	135	844	2.39
44	1155.51	4723.35	395	65	130	715	1.92
45	1238.79	5062.81	1222	75	139	819	2.10
46	1378.49	5632.09	876	68	129	711	2.30
47	1408.67	5755.09	419	62	125	616	2.03
48	1461.30	5969.55	1444	66	114	509	2.58
49	1496.78	6114.10	340	51	99	452	2.29
50	1509.83	6167.28	249	57	116	616	1.15
51	1589.05	6490.04	1038	60	108	476	2.41 a
52	1593.27	6507.25	613	52	95	405	2.37 b
53	1621.57	6622.55	486	52	99	438	2.30
54	1631.60	6663.41	559	50	94	388	2.17
55	1730.69	7067.06	696	47	81	277	2.15
56	1765.57	7209.17	2874	71	98	412	2.47
57	1848.46	7546.82	446	47	89	313	2.74

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RSSI High Resolution Gamma Spectroscopy Analysis

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Quantum Technology

GDR_C Background Subtract Results

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Sample ID : 031228 STS P# 1-32193-XC 9D SOUTH

Bkg File:h:\gdr\bkg\nocal.bkg | Counting Start. 03-27-03 11:11

ID:. NOCAL 24 Hour Background | Current Date 00-00-00 00:00

PK#	ENERGY (keV)	FWHM (keV)	OLD NET COUNTS	OLD UN- CERTAINTY	NEW NET COUNTS	NEW UN- CERTAINTY	FLAG
2	74.99	1.72	13101	376	12990	376	
4	84.90	1.51	1242	385	1214	385	
7	93.73	1.55	2782	299	2766	299	
11	186.36	1.69	5518	272	5483	272	
13	238.79	1.92	66940	396	66908	396	
17	295.38	1.99	14353	231	14333	231	
21	352.07	1.89	24330	247	24286	247	
24	510.77	2.04	6558	164	6463	164	
26	583.37	1.95	20493	196	20465	196	
27	609.50	2.04	18184	191	18137	191	
39	911.59	2.10	13921	149	13894	149	
42	969.36	2.41	8256	121	8240	121	
43	1120.86	2.39	3547	88	3528	88	
48	1461.30	2.58	1444	66	1258	66	

Sample Location 9D North

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 RSSI High Resolution Gamma Spectroscopy Analysis
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Quantum Technology
 GDR_C Nuclide Activity Summary
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Sample ID: 031227 STS P#1-32193-XC 9D NORTH

 Sample Size 7.80e+002 g | Spectrum File . . H:\PCASPEC\031227.SPM
 Sampling Start. 00-00-00 00:00 | Counting Start. 03-27-03 09:36
 Sampling Stop 00-00-00 00:00 | Buildup Time. 0.00e+000 Hrs
 Current Date. 00-00-00 00:00 | Decay Time. 0.00e+000 Hrs

Efficiency File:h:\gdr\eff\500mar.eff | Library File. . . h:\gdr\lib\nuthk.lib
 ID. 500mar | ID. U & Th Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 04-26-02 12:00

Gamma Fraction Limit >= . . . 71.00 % | Decay Limit <= . . . 8.000 Halflives
 Library Energy Tolerance. . . 1.20

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
Bi-214	Average:	7.76e-005 +-5.69e-007	3.32e-001	8 of 10
	609.31	6.95e-005 +-6.73e-007		
	727.17	1.83e-004 +-2.56e-006		
	768.36	7.36e-005 +-4.07e-006		
	934.06	7.42e-005 +-6.53e-006		
	1120.30	7.55e-005 +-1.80e-006		
	1238.10	7.06e-005 +-4.36e-006		
	1377.70	7.61e-005 +-6.32e-006		
	1764.50	8.96e-005 +-1.96e-006		
Pb-212	Average:	1.23e-004 +-3.55e-007	1.06e+001	6 of 6
	74.82	1.26e-004 +-2.75e-006		
	77.11	1.05e-004 +-1.36e-006		
	87.30	8.04e-005 +-1.81e-006		
	115.19	1.26e-004 +-2.28e-005		
	238.63	1.26e-004 +-3.83e-007		
	300.09	1.09e-004 +-2.91e-006		
Pb-214	Average:	6.13e-005 +-4.61e-007	4.47e-001	5 of 6
	74.82	6.09e-005 +-9.03e-006		
	87.30	6.09e-005 +-5.94e-006		
	241.98	6.09e-005 +-2.06e-006		
	295.21	6.26e-005 +-9.29e-007		
	351.92	6.09e-005 +-5.54e-007		
Th-228	84.37	1.29e-004 +-1.64e-005	1.68e+004	1 of 2
Ac-228	Average:	1.31e-004 +-4.78e-007	6.13e+000	10 of 10
	89.95	2.55e-004 +-4.93e-006		
	93.35	8.75e-005 +-4.16e-006		
	209.28	1.05e-004 +-2.63e-006		
	270.23	1.09e-004 +-2.84e-006		

	327.64	1.02e-004	+2.92e-006			
	338.32	1.28e-004	+1.14e-006			
	463.00	1.14e-004	+2.29e-006			
	794.70	1.16e-004	+2.72e-006			
	911.07	1.36e-004	+7.37e-007			
	969.11	1.37e-004	+1.03e-006			
Ra-226	186.10		I.D.Only	1.40e+007	1 of	1
Ra-224	240.98	1.46e-004	+1.99e-006	8.69e+001	1 of	1
K-40	1460.80	1.69e-005	+1.06e-006	1.12e+013	1 of	1

TOTAL: 6.85e-004 uCi/g

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un- Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
51.41	220.89	10054	448	934	30051	1.49	2.686e+002
105.69	442.34	3361	621	1332	54860	1.35	2.487e+001
129.37	538.97	12391	528	1061	59301	1.65	7.761e+001
154.10	639.86	4013	454	914	48577	1.74	2.374e+001
277.56	1143.51	10080	468	983	30536	2.20	7.459e+001
288.27	1187.17	1467	443	956	26174	1.94	1.115e+001
409.59	1682.05	6156	259	512	12608	1.88	6.176e+001
453.14	1859.67	992	209	425	9517	1.60	1.084e+001
510.83	2094.97	22163	292	526	11756	2.09	2.685e+002
562.67	2306.36	2001	191	381	7634	1.72	2.637e+001
583.34	2390.66	72177	365	522	10775	2.02	9.818e+002
755.51	3092.73	2054	240	515	6478	2.38	3.511e+001
763.62	3125.80	1274	226	482	6899	2.53	2.198e+001
772.53	3162.11	2838	158	306	4709	2.19	4.948e+001
782.54	3202.94	853	247	535	7341	1.74	1.504e+001
785.75	3216.00	2526	175	361	4081	1.90	4.471e+001
830.53	3398.60	848	141	294	3200	1.66	1.577e+001
836.04	3421.04	3349	140	265	3385	2.28	6.263e+001
840.25	3438.23	1951	139	280	2981	2.20	3.665e+001
860.86	3522.24	8136	158	270	3360	2.03	1.562e+002
893.82	3656.63	601	125	257	2929	1.67	1.193e+001
904.53	3700.31	1086	162	341	3637	2.01	2.179e+001
965.15	3947.41	8935	140	215	2173	2.29	1.899e+002
1078.94	4411.26	890	95	189	1640	2.43	2.089e+001
1094.58	4475.02	1098	109	219	1890	2.54	2.611e+001
1111.16	4542.58	644	98	198	1738	1.92	1.552e+001
1155.48	4723.24	829	98	195	1688	3.12	2.069e+001
1247.43	5098.01	502	142	306	2557	2.02	1.342e+001
1281.74	5237.83	466	101	209	1787	1.86	1.276e+001
1408.75	5755.41	631	88	176	1424	2.27	1.880e+001
1496.72	6113.85	623	89	183	1224	2.14	1.959e+001
1581.76	6460.35	789	102	214	1263	2.68	2.607e+001
1589.00	6489.86	4082	95	148	1009	2.61	1.354e+002
1593.33	6507.49	2320	93	170	996	2.83	7.716e+001
1621.51	6622.29	1668	93	174	1342	2.27	5.635e+001
1631.57	6663.28	1912	98	189	1157	2.42	6.496e+001
1639.26	6694.61	530	92	191	1166	2.18	1.808e+001
1730.70	7067.12	938	80	157	1008	2.66	3.359e+001
1848.54	7547.13	526	74	147	954	2.18	1.998e+001

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 RSSI High Resolution Gamma Spectroscopy Analysis
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Quantum Technology
 GDR_C Version 6.0
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Sample ID : 031227 STS P#1-32193-XC 9D NORTH

 Sample Size 7.80e+002 g | Spectrum File . . H:\PCASPEC\031227.SPM
 Sampling Start. 00-00-00 00:00 | Counting Start. 03-27-03 09:36
 Sampling Stop 00-00-00 00:00 | Live Time 3600 Sec
 Current Date. 00-00-00 00:00 | Real Time 0 Sec

Detector #: 1
 Energy(keV)= -2.72 + 0.245*Ch + 2.84e-008*Ch^2 + 0.00e+000*Ch^3 00-00-00 00:00
 FWHM(keV) = 1.49 + 0.019*En + -2.37e-005*En^2 + 0.00e+000*En^3 04-24-03 09:00
 Where En = Sqrt(Energy in keV)

Sensitivity 2.00 | Search Start / End. 0 / 8191
Sigma Multiplier. 1.00

PEAK SEARCH RESULTS

PK. #	ENERGY (keV)	ADDRESS CHANNEL	NET COUNTS	UN- CERTAINTY	C.L. COUNTS	BKG COUNTS	FWHM (keV)	FLAG
1	46.54	201.00	0	248	497	15958	0.01	a NET < CL
2	51.41	220.89	10054	448	934	30051	1.49	b
3	75.24	318.12	47012	671	1369	57490	2.35	a
4	77.48	327.25	45432	590	1161	54390	1.44	b
5	85.12	358.41	4581	578	1206	62110	1.73	c
6	87.48	368.06	23373	427	794	42933	1.74	d
7	90.16	378.97	16300	316	541	29393	1.83	e
8	93.33	391.92	9639	457	906	47824	1.72	f
9	99.90	418.73	146	668	1433	68520	1.37	g NET < CL
10	105.69	442.34	3361	621	1332	54860	1.35	h
11	115.31	481.59	3134	565	1176	61142	1.78	
12	129.37	538.97	12391	528	1061	59301	1.65	
13	154.10	639.86	4013	454	914	48577	1.74	
14	186.31	771.26	8327	465	937	46186	1.96	
15	209.44	865.62	20192	507	1014	47304	1.76	
16	238.77	985.25	234551	711	1112	43756	1.97	a
17	241.42	996.05	34426	334	561	19098	2.13	b
18	270.45	1114.50	14721	384	772	22728	1.76	a
19	277.56	1143.51	10080	468	983	30536	2.20	b
20	288.27	1187.17	1467	443	956	26174	1.94	a
21	295.34	1216.01	22846	339	626	19572	2.05	b
22	300.24	1236.01	13263	354	712	18445	1.99	c
23	328.08	1349.56	10623	305	593	17662	1.82	
24	338.48	1391.99	46346	413	744	21868	1.84	
25	352.06	1447.39	37544	341	582	16299	1.90	
26	409.59	1682.05	6156	259	512	12608	1.88	
27	453.14	1859.67	992	209	425	9517	1.60	
28	463.14	1900.45	12373	249	462	10277	1.86	

29	510.83	2094.97	22258	291	526	11756	2.09	
30	562.67	2306.36	2001	191	381	7634	1.72	
31	583.34	2390.66	72205	365	522	10775	2.02	
32	609.51	2497.40	27591	267	435	8700	1.94	
33	727.55	2978.70	15813	221	379	6608	2.08	
34	755.51	3092.73	2054	240	515	6478	2.38	a
35	763.62	3125.80	1274	226	482	6899	2.53	b
36	768.63	3146.20	2589	143	273	4201	2.32	c
37	772.53	3162.11	2838	158	306	4709	2.19	d
38	782.54	3202.94	853	247	535	7341	1.74	e
39	785.75	3216.00	2526	175	361	4081	1.90	f
40	795.23	3254.66	8198	192	359	5087	2.07	
41	830.53	3398.60	848	141	294	3200	1.68	a
42	836.04	3421.04	3349	140	265	3385	2.28	b
43	840.25	3438.23	1951	139	280	2981	2.20	c
44	860.86	3522.24	8136	158	270	3360	2.03	
45	893.82	3656.63	601	125	257	2929	1.67	
46	904.53	3700.31	1086	162	341	3637	2.01	a
47	911.54	3728.87	51049	276	340	3623	2.44	b
48	934.54	3822.61	1394	123	246	2570	2.21	
49	965.15	3947.41	8935	140	215	2173	2.29	a
50	969.33	3964.45	29181	218	288	3105	2.38	b
51	1078.94	4411.26	890	95	189	1640	2.43	
52	1094.58	4475.02	1098	109	219	1890	2.54	
53	1111.16	4542.58	644	98	198	1738	1.92	
54	1120.83	4582.00	5714	136	239	2336	2.37	
55	1155.48	4723.24	829	98	195	1688	3.12	
56	1238.71	5062.45	1912	118	235	1853	2.07	a
57	1247.43	5098.01	502	142	306	2557	2.02	b
58	1281.74	5237.83	466	101	209	1787	1.86	
59	1378.64	5632.72	1293	107	214	1872	2.15	
60	1408.75	5755.41	631	88	176	1424	2.27	
61	1460.78	5967.40	1874	106	206	1519	3.70	
62	1496.72	6113.86	623	89	183	1224	2.14	a
63	1502.27	6136.47	171	96	201	1726	1.94	b NET < CL
64	1509.78	6167.08	58	127	276	2142	1.77	c NET < CL
65	1581.76	6460.35	789	102	214	1263	2.68	a
66	1589.00	6489.86	4082	95	148	1009	2.61	b
67	1593.33	6507.49	2320	93	170	996	2.83	c
68	1621.51	6622.29	1668	93	174	1342	2.27	
69	1631.57	6663.28	1912	98	189	1157	2.42	a
70	1639.26	6694.61	530	92	191	1166	2.18	b
71	1730.70	7067.12	938	80	157	1008	2.66	
72	1765.52	7208.98	4711	103	162	1076	2.65	
73	1848.54	7547.13	526	74	147	954	2.18	

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RSSI High Resolution Gamma Spectroscopy Analysis

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Quantum Technology

GDR_C Background Subtract Results

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Sample ID : 031227 STS P#1-32193-XC 9D NORTH

Bkg File:h:\gdr\bkg\nocal.bkg | Counting Start. 03-27-03 09:36

ID:. NOCAL 24 Hour Background | Current Date 00-00-00 00:00

PK#	ENERGY (keV)	FWHM (keV)	OLD NET COUNTS	OLD UN- CERTAINTY	NEW NET COUNTS	NEW UN- CERTAINTY	FLAG
3	75.24	2.35	47012	671	46884	671	
5	85.12	1.73	4581	578	4555	578	
8	93.33	1.72	9639	457	9609	457	
14	186.31	1.96	8327	465	8292	465	
16	238.77	1.97	234551	711	234519	711	
21	295.34	2.05	22846	339	22826	339	
25	352.06	1.90	37544	341	37500	341	
29	510.83	2.09	22258	291	22163	292	
31	583.34	2.02	72205	365	72177	365	
32	609.51	1.94	27591	267	27544	267	
47	911.54	2.44	51049	276	51022	276	
50	969.33	2.38	29181	218	29165	218	
54	1120.83	2.37	5714	136	5695	136	
61	1460.78	3.70	1874	106	1688	106	

sahci

CHAIN OF CUSTODY

Stan A. Huber Consultants, Inc.
200 N. Cedar Rd.
New Lenox, IL 60451
(815) 485-6161
Fax (815) 485-4433

Results Company STS Consultants, Inc.
To: Name Rich Berggreen
Address 750 Corporate Woods Pkwy.
City Vernon Hills ST IL Zip 60061
Phone (847) 279-2572 Fax (847) 279-2510

Bill To:
Company STS Consultants, Inc.
Name Rich Berggreen
Address 750 Corporate Woods Pkwy.
City Vernon Hills ST IL Zip 60061

Company <u>STS Consultants, Inc.</u> Client Contact <u>Rich Berggreen</u> Address <u>750 Corporate Woods Pkwy.</u> City <u>Vernon Hills ST IL</u> Zip <u>60061</u> Phone <u>(847) 279-2572</u> Fax <u>(847) 279-2510</u>								P. O. # _____ Project # <u>1-32193-XC</u> Project ID: <u>Lakeshore East - 221 N. Columbus</u>				Analysis Ordered NUTRANT <u>9 mm spc</u>				Comments/Description
Sample L.D. Location	Sample Type	Container Size	Container Type	Container Number	Sampling Date	Sampling Time	Lab I.D.									
<u>9D North</u>	<u>Soil</u>	<u>20-ml 500-ml</u>	<u>Plastic-Vial</u>		<u>3/24/03</u>	<u>1:00p</u>			X				<u>QC split for</u>			
<u>9A South</u>	<u>Soil</u>	<u>500-ml</u>	<u>mg celli</u>		<u>3/24/03</u>	<u>1:00p</u>			X				<u>9A/9D Exclusion</u>			
													<u>Zone Neutral</u>			
													<u>split: 52479</u>			
													<u>52480</u>			

Chain-of-Possession

Relinquished By: <u>[Signature]</u>	Received By: <u>Rich Bg</u>	Date/Time: <u>3/26/03 10:55 AM</u>	Relinquished By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date/Time: <u>3/26/03 2:15 PM</u>
Relinquished By:	Received By:	Date/Time:	Relinquished By:	Received By:	Date/Time:
Relinquished By:	Received By:	Date/Time:	Relinquished By:	Received By:	Date/Time:



THE INFRASTRUCTURE IMPERATIVE

D



APPENDIX D

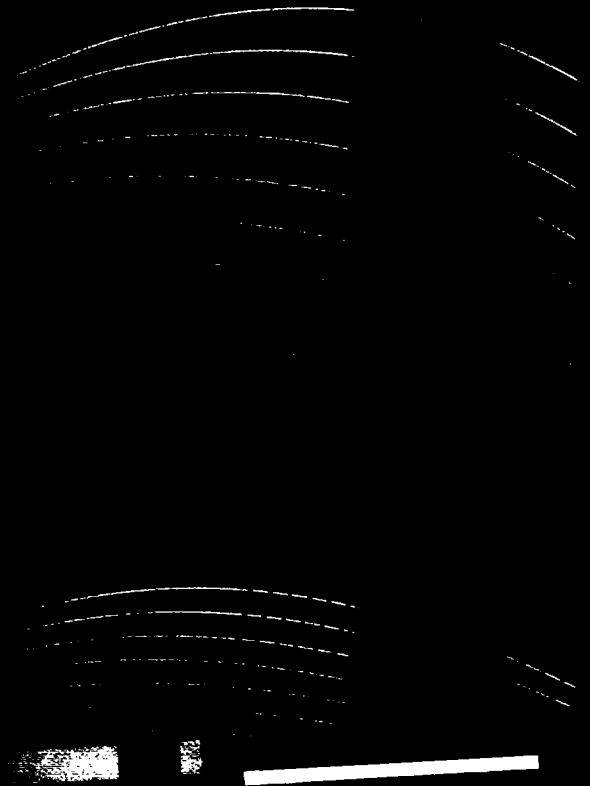
USEPA Contract Laboratory Analytical Data



USEPA Contract Laboratory
Analytical Data is to be provided by the USEPA



THE
INFRASTRUCTURE
IMPERATIVE



E



APPENDIX E

Air Monitoring Results

- a. Perimeter Air Monitoring
- b. Personal Air Monitoring



a. **Perimeter Air Monitoring**



Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #23 3/10/03-3/14/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/10/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/11/2003	0	0.00E+00	0.00E+00	
3/12/2003	0	0.00E+00	0.00E+00	
3/13/2003	0	0.00E+00	0.00E+00	
3/14/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!

4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/10/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/11/2003	0	0.00E+00	0.00E+00	
3/12/2003	0	0.00E+00	0.00E+00	
3/13/2003	0	0.00E+00	0.00E+00	
3/14/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!

4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/10/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/11/2003	0	0.00E+00	0.00E+00	
3/12/2003	0	0.00E+00	0.00E+00	
3/13/2003	0	0.00E+00	0.00E+00	
3/14/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!

4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/10/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/11/2003	0	0.00E+00	0.00E+00	
3/12/2003	0	0.00E+00	0.00E+00	
3/13/2003	0	0.00E+00	0.00E+00	
3/14/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Week 23

March 10, 2003 - March 14, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
No Area Air Monitoring This Week																	
PAM's ONLY																	

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #24 3/17/03-3/21/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/17/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/18/2003	0	0.00E+00	0.00E+00	
3/19/2003	0	0.00E+00	0.00E+00	
3/20/2003	0	0.00E+00	0.00E+00	
3/21/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/17/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/18/2003	0	0.00E+00	0.00E+00	
3/19/2003	0	0.00E+00	0.00E+00	
3/20/2003	0	0.00E+00	0.00E+00	
3/21/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/17/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/18/2003	0	0.00E+00	0.00E+00	
3/19/2003	0	0.00E+00	0.00E+00	
3/20/2003	0	0.00E+00	0.00E+00	
3/21/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/17/2003	0	0.00E+00	0.00E+00	No Area Air Monitoring This Week
3/18/2003	0	0.00E+00	0.00E+00	
3/19/2003	0	0.00E+00	0.00E+00	
3/20/2003	0	0.00E+00	0.00E+00	
3/21/2003	0	0.00E+00	0.00E+00	
0		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly**Effluent Concentration (West) =****#DIV/0! uCi/ml****Percentage of Release Limit of =****#DIV/0!**

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Week 24

March 17, 2003 - March 21, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
No Area Air Monitoring This Week																	
PAM's ONLY																	

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #25 3/24/03-3/28/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/24/2003	462	0.00E+00	0.00E+00	
3/25/2003	383	1.71E-15	6.55E-13	
3/26/2003	458	6.46E-16	2.96E-13	
3/27/2003	433	0.00E+00	0.00E+00	
3/28/2003	399	0.00E+00	0.00E+00	
	2135	2.36E-15	9.51E-13	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 4.45E-16 uCi/ml

Percentage of Release Limit of = 11.13%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/24/2003	472	0.00E+00	0.00E+00	
3/25/2003	383	0.00E+00	0.00E+00	
3/26/2003	458	1.89E-15	8.66E-13	
3/27/2003	433	0.00E+00	0.00E+00	
3/28/2003	394	0.00E+00	0.00E+00	
	2140	1.89E-15	8.66E-13	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 4.04E-16 uCi/ml

Percentage of Release Limit of = 10.11%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/24/2003	463	5.82E-16	2.69E-13	
3/25/2003	383	0.00E+00	0.00E+00	
3/26/2003	458	0.00E+00	0.00E+00	
3/27/2003	439	1.73E-15	7.59E-13	
3/28/2003	396	1.49E-15	5.90E-13	
	2139	3.80E-15	1.62E-12	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 7.57E-16 uCi/ml

Percentage of Release Limit of = 18.92%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/24/2003	464	1.05E-15	4.87E-13	
3/25/2003	380	2.13E-15	8.09E-13	
3/26/2003	460	0.00E+00	0.00E+00	
3/27/2003	436	0.00E+00	0.00E+00	
3/28/2003	399	8.00E-16	3.19E-13	
2139		3.98E-15	1.62E-12	

$$C_{avg} = \frac{\sum T_s C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 7.55E-16 uCi/ml

Percentage of Release Limit of = 18.88%

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Week 25

March 24, 2003 - March 28, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2042	3/24/2003	7:53am	3:35pm	462	35	1.60E+07	3/25/2003	128	12	3.86667	8.70E-14	3/28/2003	12	13	0	0.00E+00	0.00%
S2042	3/24/2003	7:47am	3:39pm	472	47	2.20E+07	3/25/2003	103	12	3.03333	4.97E-14	3/28/2003	12	13	0	0.00E+00	0.00%
E2042	3/24/2003	7:52am	3:35pm	463	45	2.06E+07	3/25/2003	139	12	4.23333	7.39E-14	3/28/2003	14	13	0.033	5.82E-16	14.55%
W2042	3/24/2003	7:55am	3:39pm	464	50	2.30E+07	3/25/2003	148	12	4.53333	7.11E-14	3/28/2003	15	13	0.067	1.05E-15	26.13%
N2043	3/25/2003	7:38am	2:01pm	383	37	1.40E+07	3/26/2003	44	13	1.03333	2.65E-14	3/31/2003	14	12	0.067	1.71E-15	42.78%
S2043	3/25/2003	7:42am	2:05pm	383	50	1.90E+07	3/26/2003	71	13	1.93333	3.67E-14	3/31/2003	11	12	0	0.00E+00	0.00%
E2043	3/25/2003	7:44am	2:07pm	383	30	1.14E+07	3/26/2003	48	13	1.16667	3.69E-14	3/31/2003	12	12	0	0.00E+00	0.00%
W2043	3/25/2003	7:40am	2:00pm	380	45	1.69E+07	3/26/2003	54	13	1.36667	2.91E-14	3/31/2003	15	12	0.1	2.13E-15	53.18%
N2044	3/26/2003	7:40am	3:18pm	458	41	1.86E+07	3/27/2003	58	11	1.56667	3.03E-14	3/31/2003	13	12	0.033	6.46E-16	16.14%
S2044	3/26/2003	7:37am	3:15pm	458	42	1.91E+07	3/27/2003	103	11	3.06667	5.80E-14	3/31/2003	15	12	0.1	1.89E-15	47.28%
E2044	3/26/2003	7:42am	3:20pm	458	40	1.82E+07	3/27/2003	86	11	2.5	4.96E-14	3/31/2003	10	12	0	0.00E+00	0.00%
W2044	3/26/2003	7:35am	3:15pm	460	44	2.01E+07	3/27/2003	89	11	2.6	4.67E-14	3/31/2003	12	12	0	0.00E+00	0.00%
N2045	3/27/2003	7:54am	3:07pm	433	35	1.50E+07	3/28/2003	64	13	1.7	4.08E-14	4/1/2003	10	12	0	0.00E+00	0.00%
S2045	3/27/2003	7:57am	3:10pm	433	42	1.80E+07	3/28/2003	97	13	2.8	5.60E-14	4/1/2003	11	12	0	0.00E+00	0.00%
E2045	3/27/2003	7:50am	3:09pm	439	32	1.39E+07	3/28/2003	66	13	1.76667	4.57E-14	4/1/2003	14	12	0.067	1.73E-15	43.16%
W2045	3/27/2003	7:55am	3:11pm	436	37	1.60E+07	3/28/2003	133	13	4	9.02E-14	4/1/2003	12	12	0	0.00E+00	0.00%
N2046	3/28/2003	7:56am	2:35pm	399	37	1.46E+07	3/31/2003	14	12	0.06667	1.64E-15	4/2/2003	11	11	0	0.00E+00	0.00%
S2046	3/28/2003	8:04am	2:38pm	394	42	1.64E+07	3/31/2003	18	12	0.2	4.40E-15	4/2/2003	10	11	0	0.00E+00	0.00%
E2046	3/28/2003	7:59am	2:35pm	396	41	1.61E+07	3/31/2003	17	12	0.16667	3.73E-15	4/2/2003	13	11	0.067	1.49E-15	37.34%
W2046	3/28/2003	8:01am	2:40pm	399	38	1.50E+07	3/31/2003	13	12	0.03333	8.00E-16	4/2/2003	12	11	0.033	8.00E-16	19.99%

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #26 3/31/03-4/4/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/31/2003	459	6.44E-16	2.96E-13	
4/1/2003	422	0.00E+00	0.00E+00	
4/2/2003	427	6.04E-16	2.58E-13	
4/3/2003	406	2.30E-15	9.34E-13	
4/4/2003	0	0.00E+00	0.00E+00	No Field Work on 4/4/03 - Rained Out
1714		3.55E-15	1.49E-12	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 8.68E-16 uCi/ml

Percentage of Release Limit of = 21.69%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/31/2003	459	0.00E+00	0.00E+00	
4/1/2003	422	1.34E-15	5.65E-13	
4/2/2003	427	0.00E+00	0.00E+00	
4/3/2003	408	0.00E+00	0.00E+00	
4/4/2003	0	0.00E+00	0.00E+00	No Field Work on 4/4/03 - Rained Out
1716		1.34E-15	5.65E-13	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 3.30E-16 uCi/ml

Percentage of Release Limit of = 8.24%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/31/2003	455	0.00E+00	0.00E+00	
4/1/2003	420	6.71E-16	2.82E-13	
4/2/2003	429	7.44E-16	3.19E-13	
4/3/2003	415	6.22E-16	2.58E-13	
4/4/2003	0	0.00E+00	0.00E+00	No Field Work on 4/4/03 - Rained Out
1719		2.04E-15	8.59E-13	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 5.00E-16 uCi/ml

Percentage of Release Limit of = 12.49%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
3/31/2003	455	0.00E+00	0.00E+00	No Field Work on 4/4/03 - Rained Out
4/1/2003	420	0.00E+00	0.00E+00	
4/2/2003	434	0.00E+00	0.00E+00	
4/3/2003	410	0.00E+00	0.00E+00	
4/4/2003	0	0.00E+00	0.00E+00	
1719		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s C}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Week 26

March 31, 2003 - April 4, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2047	3/31/2003	8:09am	3:48pm	459	41	1.87E+07	4/1/2003	58	12	1.53333	2.96E-14	4/4/2003	13	12	0.033	6.44E-16	16.11%
S2047	3/31/2003	8:16am	3:55pm	459	45	2.05E+07	4/1/2003	64	12	1.73333	3.05E-14	4/4/2003	12	12	0	0.00E+00	0.00%
E2047	3/31/2003	8:10am	3:45pm	455	47	2.12E+07	4/1/2003	71	12	1.96667	3.35E-14	4/4/2003	10	12	0	0.00E+00	0.00%
W2047	3/31/2003	8:15am	3:50pm	455	52	2.34E+07	4/1/2003	66	12	1.8	2.77E-14	4/4/2003	12	12	0	0.00E+00	0.00%
N2048	4/1/2003	8:25am	3:27pm	422	47	1.97E+07	4/2/2003	481	11	15.6667	2.87E-13	4/7/2003	10	12	0	0.00E+00	0.00%
S2048	4/1/2003	8:23am	3:25pm	422	43	1.80E+07	4/2/2003	426	11	13.8333	2.77E-13	4/7/2003	14	12	0.067	1.34E-15	33.41%
E2048	4/1/2003	8:25am	3:25pm	420	43	1.79E+07	4/2/2003	439	11	14.2667	2.87E-13	4/7/2003	13	12	0.033	6.71E-16	16.78%
W2048	4/1/2003	8:21am	3:21pm	420	42	1.75E+07	4/2/2003	455	11	14.8	3.05E-13	4/7/2003	11	12	0	0.00E+00	0.00%
N2049	4/2/2003	8:18am	3:25pm	427	47	1.99E+07	4/3/2003	58	10	1.6	2.90E-14	4/7/1930	13	12	0.033	6.04E-16	15.10%
S2049	4/2/2003	8:21am	3:28pm	427	42	1.78E+07	4/3/2003	61	10	1.7	3.45E-14	4/7/2003	10	12	0	0.00E+00	0.00%
E2049	4/2/2003	8:20am	3:29pm	429	38	1.62E+07	4/3/2003	67	10	1.9	4.24E-14	4/7/2003	13	12	0.033	7.44E-16	18.59%
W2049	4/2/2003	8:17am	3:31pm	434	41	1.76E+07	4/3/2003	50	10	1.33333	2.73E-14	4/7/2003	12	12	0	0.00E+00	0.00%
N2050	4/3/2003	8:42am	3:38pm	406	39	1.57E+07	4/4/2003	70	12	1.93333	4.44E-14	4/10/2003	16	13	0.1	2.30E-15	57.43%
S2050	4/3/2003	8:34am	3:22pm	408	45	1.82E+07	4/4/2003	112	12	3.33333	6.60E-14	4/10/2003	13	13	0	0.00E+00	0.00%
E2050	4/3/2003	8:36am	3:31pm	415	47	1.93E+07	4/4/2003	158	12	4.86667	9.08E-14	4/10/2003	14	13	0.033	6.22E-16	15.54%
W2050	4/3/2003	8:40am	3:30pm	410	47	1.91E+07	4/4/2003	131	12	3.96667	7.49E-14	4/10/2003	11	13	0	0.00E+00	0.00%
No Field Work on 4/4/03 - Rained Out																	

* 4 day analysis of air samples collected on 4/3/03 (2050) were not analyzed until 4/10/03 because we did not work on 4/8/03 and 4/9/03

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #27 4/7/03-4/11/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
4/7/2003	0	0.00E+00	0.00E+00	
4/8/2003	0	0.00E+00	0.00E+00	
4/9/2003	0	0.00E+00	0.00E+00	
4/10/2003	404	0.00E+00	0.00E+00	
4/11/2003	0	0.00E+00	0.00E+00	
	404	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
4/7/2003	0	0.00E+00	0.00E+00	
4/8/2003	0	0.00E+00	0.00E+00	
4/9/2003	0	0.00E+00	0.00E+00	
4/10/2003	0	0.00E+00	0.00E+00	No sample collected today-equipment
4/11/2003	0	0.00E+00	0.00E+00	
	0	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = #DIV/0! uCi/ml

Percentage of Release Limit of = #DIV/0!

4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
4/7/2003	0	0.00E+00	0.00E+00	
4/8/2003	0	0.00E+00	0.00E+00	
4/9/2003	0	0.00E+00	0.00E+00	
4/10/2003	406	0.00E+00	0.00E+00	
4/11/2003	0	0.00E+00	0.00E+00	
	406	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_{s,i} C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
4/7/2003	0	0.00E+00	0.00E+00	
4/8/2003	0	0.00E+00	0.00E+00	
4/9/2003	0	0.00E+00	0.00E+00	
4/10/2003	406	0.00E+00	0.00E+00	
4/11/2003	0	0.00E+00	0.00E+00	
406		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_s \cdot C_i}{\sum T_s}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

April 7, 2003 - April 11, 2003

[illegible]

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #28 6/16/03 - 6/20/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/16/03	0	0.00E+00	0.00E+00	
6/17/03	0	0.00E+00	0.00E+00	
6/18/03	291	9.47E-16	2.76E-13	
6/19/03	265	0.00E+00	0.00E+00	
6/20/03	0	0.00E+00	0.00E+00	
	556	9.47E-16	2.76E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 4.96E-16 uCi/ml

Percentage of Release Limit of = 12.39%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/16/03	0	0.00E+00	0.00E+00	
6/17/03	0	0.00E+00	0.00E+00	
6/18/03	310	0.00E+00	0.00E+00	
6/19/03	262	0.00E+00	0.00E+00	
6/20/03	0	0.00E+00	0.00E+00	
	572	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/16/03	0	0.00E+00	0.00E+00	
6/17/03	0	0.00E+00	0.00E+00	
6/18/03	300	0.00E+00	0.00E+00	
6/19/03	268	0.00E+00	0.00E+00	
6/20/03	0	0.00E+00	0.00E+00	
	568	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration In uCi/ml	Concentration x Sample Min / Day	Comments
6/16/03	0	0.00E+00	0.00E+00	
6/17/03	0	0.00E+00	0.00E+00	
6/18/03	307	0.00E+00	0.00E+00	
6/19/03	263	0.00E+00	0.00E+00	
6/20/03	0	0.00E+00	0.00E+00	
570		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

Note: This is the first week of onsite soil excavation since April 11, 2003. Radiation monitoring of construction activities inside slip areas started on 6/16/03.

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Week 28

June 16, 2003 - June 20, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2052	6/18/03	8:47am	1:38pm	291	44	1.27E+07	6/19/03	80	12	2.26667	6.44E-14	6/23/03	14	13	0.033	9.47E-16	23.67%
S2052	6/18/03	8:40am	1:50pm	310	48	1.47E+07	6/19/03	73	12	2.03333	4.97E-14	6/23/03	11	13	0	0.00E+00	0.00%
E2052	6/18/03	8:50am	1:50pm	300	44	1.31E+07	6/19/03	58	12	1.53333	4.23E-14	6/23/03	13	13	0	0.00E+00	0.00%
W2052	6/18/03	8:38am	1:45pm	307	45	1.37E+07	6/19/03	79	12	2.23333	5.88E-14	6/23/03	12	13	0	0.00E+00	0.00%
N2053	6/19/03	9:14am	1:39pm	265	45	1.18E+07	6/20/03	49	11	1.26667	3.86E-14	6/24/03	11	13	0	0.00E+00	0.00%
S2053	6/19/03	9:10am	1:32pm	262	45	1.17E+07	6/20/03	58	11	1.56667	4.83E-14	6/24/03	13	13	0	0.00E+00	0.00%
E2053	6/19/03	9:12am	1:40pm	268	42	1.12E+07	6/20/03	36	11	0.83333	2.69E-14	6/24/03	12	13	0	0.00E+00	0.00%
W2053	6/19/03	9:07am	1:30pm	263	46	1.20E+07	6/20/03	40	11	0.96667	2.91E-14	6/24/03	12	13	0	0.00E+00	0.00%
<p>Note: There has been no onsite excavation of soil since April 11, 2003. Radiation monitoring of construction activities started on June 16, 2003.</p> <p>Wednesday 6/18/03 and Thursday 6/19/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days</p>																	

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Week #29 6/23/03 - 6/27/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/23/03	0	0.00E+00	0.00E+00	
6/24/03	0	0.00E+00	0.00E+00	
6/25/03	0	0.00E+00	0.00E+00	
6/26/03	152	0.00E+00	0.00E+00	
6/27/03	127	0.00E+00	0.00E+00	
	279	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/23/03	0	0.00E+00	0.00E+00	
6/24/03	0	0.00E+00	0.00E+00	
6/25/03	0	0.00E+00	0.00E+00	
6/26/03	146	0.00E+00	0.00E+00	
6/27/03	131	1.97E-15	2.58E-13	
	277	1.97E-15	2.58E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 9.32E-16 uCi/ml

Percentage of Release Limit of = 23.29%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/23/03	0	0.00E+00	0.00E+00	
6/24/03	0	0.00E+00	0.00E+00	
6/25/03	0	0.00E+00	0.00E+00	
6/26/03	144	1.75E-15	2.52E-13	
6/27/03	123	0.00E+00	0.00E+00	
	267	1.75E-15	2.52E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 9.44E-16 uCi/ml

Percentage of Release Limit of = 23.60%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/23/03	0	0.00E+00	0.00E+00	
8/24/03	0	0.00E+00	0.00E+00	
8/25/03	0	0.00E+00	0.00E+00	
8/26/03	150	0.00E+00	0.00E+00	
8/27/03	122	0.00E+00	0.00E+00	
	272	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

June 23, 2003 - June 27, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2054	6/26/03	1:04pm	3:36pm	152	50	7.53E+06	6/27/03	23	11	0.4	1.91E-14	7/1/03	10	12	0	0.00E+00	0.00%
S2054	6/26/03	1:10pm	3:36pm	146	49	7.09E+06	6/27/03	20	11	0.3	1.53E-14	7/1/03	12	12	0	0.00E+00	0.00%
E2054	6/26/03	1:08pm	3:32pm	144	48	6.85E+06	6/27/03	26	11	0.5	2.63E-14	7/1/03	13	12	0.033	1.75E-15	43.86%
W2054	6/26/03	1:08pm	3:38pm	150	54	8.03E+06	6/27/03	18	11	0.23333	1.05E-14	7/1/03	9	12	0	0.00E+00	0.00%
N2055	6/27/03	12:12pm	2:19pm	127	46	5.79E+06	6/30/03	16	13	0.1	6.23E-15	7/2/03	10	12	0	0.00E+00	0.00%
S2055	6/27/03	12:10pm	2:21pm	131	47	6.10E+06	6/30/03	20	13	0.23333	1.38E-14	7/2/03	13	12	0.033	1.97E-15	49.23%
E2055	6/27/03	12:17pm	2:20pm	123	52	6.34E+06	6/30/03	17	13	0.13333	7.58E-15	7/2/03	12	12	0	0.00E+00	0.00%
W2055	6/27/03	12:15pm	2:17pm	122	51	6.17E+06	6/30/03	14	13	0.03333	1.95E-15	7/2/03	12	12	0	0.00E+00	0.00%

Thursday 6/26/03 and Friday 6/27/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor Week #30 6/30/03 - 7/4/03 (High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/30/03	211	0.00E+00	0.00E+00	
7/1/03	299	1.88E-15	5.65E-13	
7/2/03	328	0.00E+00	0.00E+00	
7/3/03	0	0.00E+00	0.00E+00	
7/4/03	0	0.00E+00	0.00E+00	
	836	1.88E-15	5.65E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 6.78E-16 uCi/ml

Percentage of Release Limit of = 16.90%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/30/03	212	0.00E+00	0.00E+00	
7/1/03	302	0.00E+00	0.00E+00	
7/2/03	329	1.84E-15	6.05E-13	
7/3/03	0	0.00E+00	0.00E+00	
7/4/03	0	0.00E+00	0.00E+00	
	843	1.84E-15	6.05E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 7.18E-16 uCi/ml

Percentage of Release Limit of = 17.95%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/30/03	208	1.19E-15	2.48E-13	
7/1/03	279	0.00E+00	0.00E+00	
7/2/03	322	0.00E+00	0.00E+00	
7/3/03	0	0.00E+00	0.00E+00	
7/4/03	0	0.00E+00	0.00E+00	
	809	1.19E-15	2.48E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 3.06E-16 uCi/ml

Percentage of Release Limit of = 7.65%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
6/30/03	208	0.00E+00	0.00E+00	
7/1/03	295	0.00E+00	0.00E+00	
7/2/03	320	8.24E-16	2.64E-13	
7/3/03	0	0.00E+00	0.00E+00	
7/4/03	0	0.00E+00	0.00E+00	
	821	8.24E-16	2.64E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 3.21E-16 uCi/ml

Percentage of Release Limit of = 8.03%

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Week 30

June 30, 2003 - July 4, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/hr
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2058	6/30/03	8:51am	1:22pm	211	50	1.05E+07	7/1/03	18	12	0.2	8.90E-15	7/7/03	11	13	0	0.00E+00	0.00%
S2058	6/30/03	9:55am	1:27pm	212	52	1.09E+07	7/1/03	28	12	0.56667	1.87E-14	7/7/03	12	13	0	0.00E+00	0.00%
E2058	6/30/03	9:52am	1:20pm	208	49	1.01E+07	7/1/03	27	12	0.5	1.78E-14	7/7/03	14	13	0.033	1.18E-15	29.74%
W2058	6/30/03	9:58am	1:24pm	208	49	1.00E+07	7/1/03	21	12	0.3	1.08E-14	7/7/03	13	13	0	0.00E+00	0.00%
N2057	7/1/03	8:07am	1:06pm	299	43	1.27E+07	7/2/03	74	12	2.06667	5.85E-14	7/7/03	15	13	0.067	1.88E-15	47.15%
S2057	7/1/03	8:02am	1:04pm	302	45	1.35E+07	7/2/03	58	12	1.53333	4.10E-14	7/7/03	13	13	0	0.00E+00	0.00%
E2057	7/1/03	8:11am	12:50pm	279	41	1.13E+07	7/2/03	42	12	1	3.18E-14	7/7/03	11	13	0	0.00E+00	0.00%
W2057	7/1/03	8:07am	1:02pm	285	45	1.32E+07	7/2/03	63	12	1.36667	3.74E-14	7/7/03	13	13	0	0.00E+00	0.00%
N2058	7/2/03	7:58am	1:25pm	326	42	1.38E+07	7/3/03	44	13	1.03333	2.75E-14	7/7/03	12	13	0	0.00E+00	0.00%
S2058	7/2/03	7:58am	1:27pm	329	40	1.30E+07	7/3/03	22	13	0.3	8.29E-15	7/7/03	15	13	0.067	1.84E-15	46.07%
E2058	7/2/03	8:00am	1:22pm	322	42	1.34E+07	7/3/03	29	13	0.53333	1.43E-14	7/7/03	12	13	0	0.00E+00	0.00%
W2058	7/2/03	8:04am	1:24pm	320	46	1.46E+07	7/3/03	34	13	0.7	1.73E-14	7/7/03	14	13	0.033	8.24E-16	20.59%
Monday 6/30/03 through Wednesday 7/2/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days							* 4-day analysis of 6/30/03 samples were not analyzed until 7/7/03 due to 4th of July holiday										

07/14/03 MON 09:57 FAX 815 485 4433

STAN HUBER CONSIL

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Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Report #31 8/18/03 - 8/22/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/18/03	0	0.00E+00	0.00E+00	
8/19/03	0	0.00E+00	0.00E+00	
8/20/03	355	0.00E+00	0.00E+00	
8/21/03	428	6.30E-16	2.70E-13	
8/22/03	304	0.00E+00	0.00E+00	
1087		6.30E-16	2.70E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 2.48E-16 uCi/ml

Percentage of Release Limit of = 6.20%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/18/03	0	0.00E+00	0.00E+00	
8/19/03	0	0.00E+00	0.00E+00	
8/20/03	369	1.40E-15	5.17E-13	
8/21/03	444	0.00E+00	0.00E+00	
8/22/03	295	9.56E-16	2.82E-13	
1108		2.36E-15	7.99E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 7.21E-16 uCi/ml

Percentage of Release Limit of = 18.02%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/18/03	0	0.00E+00	0.00E+00	
8/19/03	0	0.00E+00	0.00E+00	
8/20/03	342	0.00E+00	0.00E+00	
8/21/03	429	0.00E+00	0.00E+00	
8/22/03	305	0.00E+00	0.00E+00	
1076		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/18/03	0	0.00E+00	0.00E+00	
8/19/03	0	0.00E+00	0.00E+00	
8/20/03	355	0.00E+00	0.00E+00	
8/21/03	445	0.00E+00	0.00E+00	
8/22/03	297	1.81E-15	5.38E-13	
	1097	1.81E-15	5.38E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 4.90E-16 uCi/ml

Percentage of Release Limit of = 12.25%

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

August 18, 2003 - August 22, 2003

[illegible]

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Report #32 8/25/03 - 8/29/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/25/03	281	2.05E-15	5.76E-13	Monday 8/25/03 was only day this week that excavation and loading was performed
8/26/03	0	0.00E+00	0.00E+00	
8/27/03	0	0.00E+00	0.00E+00	
8/28/03	0	0.00E+00	0.00E+00	
8/29/03	0	0.00E+00	0.00E+00	
281		2.05E-15	5.76E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 2.05E-15 uCi/ml

Percentage of Release Limit of = 51.25%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/25/03	279	0.00E+00	0.00E+00	
8/26/03	0	0.00E+00	0.00E+00	
8/27/03	0	0.00E+00	0.00E+00	
8/28/03	0	0.00E+00	0.00E+00	
8/29/03	0	0.00E+00	0.00E+00	
279		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/25/03	278	0.00E+00	0.00E+00	
8/26/03	0	0.00E+00	0.00E+00	
8/27/03	0	0.00E+00	0.00E+00	
8/28/03	0	0.00E+00	0.00E+00	
8/29/03	0	0.00E+00	0.00E+00	
278		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
8/25/03	279	0.00E+00	0.00E+00	
8/26/03	0	0.00E+00	0.00E+00	
8/27/03	0	0.00E+00	0.00E+00	
8/28/03	0	0.00E+00	0.00E+00	
8/29/03	0	0.00E+00	0.00E+00	
279		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly	
Effluent Concentration (West) =	0.00E+00 uCi/ml
Percentage of Release Limit of =	0.00%

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

August 25, 2003 - August 29, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2062	8/25/03	8:41am	1:22pm	281	42	1.17E+07	8/26/03	113	13	3.33333	1.03E-13	8/29/03	13	11	0.067	2.05E-15	51.37%
S2062	8/25/03	8:45am	1:24pm	279	41	1.13E+07	8/26/03	84	13	2.36667	7.53E-14	8/29/03	10	11	0	0.00E+00	0.00%
E2062	8/25/03	8:43am	1:21pm	278	39	1.07E+07	8/26/03	139	13	4.2	1.41E-13	8/29/03	11	11	0	0.00E+00	0.00%
W2062	8/25/03	8:47am	1:26pm	279	40	1.11E+07	8/26/03	107	13	3.13333	1.02E-13	8/29/03	9	11	0	0.00E+00	0.00%

Monday August 25, 2003 was the only day during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days.

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Report #33 10/27/03 - 10/31/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
10/27/03	0	0.00E+00	0.00E+00	No Work
10/28/03	0	0.00E+00	0.00E+00	No Work
10/29/03	307	0.00E+00	0.00E+00	
10/30/03	349	0.00E+00	0.00E+00	
10/31/03	382	0.00E+00	0.00E+00	
1038		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
10/27/03	0	0.00E+00	0.00E+00	No Work
10/28/03	0	0.00E+00	0.00E+00	No Work
10/29/03	304	1.71E-15	5.20E-13	
10/30/03	348	1.78E-15	6.12E-13	
10/31/03	383	0.00E+00	0.00E+00	
1035		3.47E-15	1.13E-12	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 1.09E-15 uCi/ml

Percentage of Release Limit of = 27.35%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
10/27/03	0	0.00E+00	0.00E+00	No Work
10/28/03	0	0.00E+00	0.00E+00	No Work
10/29/03	302	0.00E+00	0.00E+00	
10/30/03	347	0.00E+00	0.00E+00	
10/31/03	384	2.12E-15	8.14E-13	
1033		2.12E-15	8.14E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

$$\sum T_i$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 7.88E-16 uCi/ml

Percentage of Release Limit of = 19.70%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
10/27/03	0	0.00E+00	0.00E+00	No Work
10/28/03	0	0.00E+00	0.00E+00	No Work
10/29/03	310	0.00E+00	0.00E+00	
10/30/03	354	7.20E-16	2.55E-13	
10/31/03	373	8.00E-16	2.98E-13	
1037		1.52E-15	5.53E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) =	6.34E-16 uCi/ml
Percentage of Release Limit of =	13.34%

Area Air Monitoring Summary Sheet - Staplex High Volume Pumps (Daily Analysis)

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

Report No. 33

October 27, 2003 - October 31, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2063	10/29/03	8:56am	2:03pm	307	47	1.43E+07	10/30/03	86	12	2.46667	6.27E-14	11/3/03	12	12	0	0.00E+00	0.00%
S2063	10/29/03	9:01am	2:05pm	304	47	1.42E+07	10/30/03	52	12	1.33333	3.42E-14	11/3/03	14	12	0.067	1.71E-15	42.79%
E2063	10/29/03	8:58am	2:00pm	302	46	1.38E+07	10/30/03	47	12	1.16667	3.08E-14	11/3/03	12	12	0	0.00E+00	0.00%
W2063	10/29/03	8:50am	2:00pm	310	49	1.51E+07	10/30/03	67	12	1.83333	4.43E-14	11/3/03	9	12	0	0.00E+00	0.00%
N2064	10/30/03	8:25am	2:14pm	349	44	1.52E+07	10/31/03	52	13	1.3	3.11E-14	11/4/03	11	11	0	0.00E+00	0.00%
S2064	10/30/03	8:22am	2:10pm	348	40	1.38E+07	10/31/03	142	13	4.3	1.13E-13	11/4/03	13	11	0.067	1.76E-15	43.92%
E2064	10/30/03	8:28am	2:15pm	347	41	1.41E+07	10/31/03	69	13	1.86667	4.81E-14	11/4/03	10	11	0	0.00E+00	0.00%
W2064	10/30/03	8:23am	2:17pm	354	48	1.68E+07	10/31/03	67	13	1.8	3.89E-14	11/4/03	12	11	0.033	7.20E-16	17.99%
N2065	10/31/03	8:21am	2:43pm	382	45	1.70E+07	11/3/03	18	12	0.2	4.27E-15	11/8/03	10	11	0	0.00E+00	0.00%
S2065	10/31/03	8:23am	2:46pm	383	42	1.59E+07	11/3/03	22	12	0.33333	7.60E-15	11/8/03	11	11	0	0.00E+00	0.00%
E2065	10/31/03	8:23am	2:47pm	384	45	1.71E+07	11/3/03	23	12	0.36667	7.78E-15	11/8/03	14	11	0.1	2.12E-15	53.07%
W2065	10/31/03	8:28am	2:41PM	373	41	1.52E+07	11/3/03	17	12	0.16667	4.00E-15	11/8/03	12	11	0.033	8.00E-16	19.99%
Wednesday 10/29/03 through Friday 10/31/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days												** 4-day analysis of samples collected on 10/31/03 not analyzed until 11/7/03 because work was rained out on 11/5/03 & 11/6/03					

Area Air Monitoring Summary Sheet - Weekly Effluent Concentration Report

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

North Monitor

Report #34 11/3/03 - 11/7/03

(High Volume)

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
11/3/03	0	0.00E+00	0.00E+00	No Work
11/4/03	0	0.00E+00	0.00E+00	No Work
11/5/03	0	0.00E+00	0.00E+00	No Work
11/6/03	0	0.00E+00	0.00E+00	No Work
11/7/03	346	1.50E-15	5.19E-13	
	346	1.50E-15	5.19E-13	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (North) = 1.50E-15 uCi/ml

Percentage of Release Limit of = 37.50%
4E-15uCi/ml

South Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
11/3/03	0	0.00E+00	0.00E+00	No Work
11/4/03	0	0.00E+00	0.00E+00	No Work
11/5/03	0	0.00E+00	0.00E+00	No Work
11/6/03	0	0.00E+00	0.00E+00	No Work
11/7/03	338	0.00E+00	0.00E+00	
	338	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (South) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

East Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
11/3/03	0	0.00E+00	0.00E+00	No Work
11/4/03	0	0.00E+00	0.00E+00	No Work
11/5/03	0	0.00E+00	0.00E+00	No Work
11/6/03	0	0.00E+00	0.00E+00	No Work
11/7/03	336	0.00E+00	0.00E+00	
	336	0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (East) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%
4E-15uCi/ml

West Monitor

Date	Time Sampled (minutes)	Effluent Concentration in uCi/ml	Concentration x Sample Min / Day	Comments
11/3/03	0	0.00E+00	0.00E+00	No Work
11/4/03	0	0.00E+00	0.00E+00	No Work
11/5/03	0	0.00E+00	0.00E+00	No Work
11/6/03	0	0.00E+00	0.00E+00	No Work
11/7/03	339	0.00E+00	0.00E+00	
339		0.00E+00	0.00E+00	

$$C_{avg} = \frac{\sum T_i C_i}{\sum T_i}$$

Eq A.9 NUREG 1400

Time Weighted Weekly

Effluent Concentration (West) = 0.00E+00 uCi/ml

Percentage of Release Limit of = 0.00%

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

November 3, 2003 - November 7, 2003

Sample ID	date sampled	start time	stop time	total time sampled	cubic ft/ min (CFM)	sample volume analyzed	day after analysis					four day analysis					% of Limit 4.00E-15 uCi/ml
							date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	date analyzed	gross counts	bkg counts	net cpm	Concentration in uCi/ml	
N2066	11/7/03	8:12am	1:58pm	346	47	1.61E+07	11/10/03	16	13	0.1	2.26E-15	11/11/03	15	13	0.067	1.50E-15	37.60%
S2066	11/7/03	8:14am	1:52pm	338	47	1.57E+07	11/10/03	13	13	0	0.00E+00	11/11/03	13	13	0	0.00E+00	0.00%
E2066	11/7/03	8:17am	1:53pm	336	45	1.50E+07	11/10/03	14	13	0.03333	8.09E-16	11/11/03	12	13	0	0.00E+00	0.00%
W2066	11/7/03	8:11am	1:50pm	339	44	1.48E+07	11/10/03	10	13	0	0.00E+00	11/11/03	12	13	0	0.00E+00	0.00%
<p>Friday November 7, 2003 was the only day during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days.</p>																	

b. Personal Air Monitoring





Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 23 March 10 - March 14, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
3/10/2003	Lindsay Aschim	PAM2191	002-766	2.5	525	1312500	3/11/2003	18	12	0.20	3.85E-14*
3/10/2003	Jerry Krane	PAM2192	002-574	2.5	521	1302500	3/11/2003	20	12	0.27	5.17E-14*
3/11/2003	Jerry Krane	PAM2193	002-574	2.5	508	1270000	3/12/2003	18	12	0.20	3.97E-14*
3/11/2003	Tim O'Brien	PAM2194	006-234	2.5	516	1290000	3/12/2003	17	12	0.17	3.26E-14*
3/12/2003	Jerry Krane	PAM2195	006-234	2.5	516	1290000	3/13/2003	11	13	0.00	0.00E+00
3/12/2003	Lindsay Aschim	PAM2196	002-574	2.5	513	1282500	3/13/2003	13	13	0.00	0.00E+00
3/13/2003	Tim O'Brien	PAM2197	006-234	2.5	492	1230000	3/14/2003	9	12	0.00	0.00E+00
3/13/2003	Lindsay Aschim	PAM2198	002-766	2.5	497	1242500	3/14/2003	12	12	0.00	0.00E+00
3/14/2003	Tim O'Brien	PAM2199	006-234	2.5	456	1140000	3/17/2003	9	12	0.00	0.00E+00
3/14/2003	Jerry Krane	PAM2200	002-766	2.5	460	1150000	3/17/2003	11	12	0.00	0.00E+00

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.

See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 23 March 10 - March 14, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
3/10/2003	Lindsay Aschim	PAM2191	002-766	2.5	525	1312500	3/14/2003	12	12	0.00	0.00E+00	0.00%
3/10/2003	Jerry Krane	PAM2192	002-574	2.5	521	1302500	3/14/2003	10	12	0.00	0.00E+00	0.00%
3/11/2003	Jerry Krane	PAM2193	002-574	2.5	508	1270000	3/17/2003	12	12	0.00	0.00E+00	0.00%
3/11/2003	Tim O'Brien	PAM2194	006-234	2.5	516	1290000	3/17/2003	11	12	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 24 March 17 - March 21, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
3/17/2003	Lindsay Aschim	PAM2201	002-766	2.5	425	1062500	3/18/2003	18	10	0.27	6.33E-14 *
3/17/2003	Tim O'Brien	PAM2202	002-574	2.5	485	1212500	3/18/2003	16	10	0.20	4.16E-14 *
3/18/2003	Jerry Krane	PAM2203	002-574	2.5	525	1312500	3/19/2003	12	13	0.00	0.00E+00
3/18/2003	Tim O'Brien	PAM2204	002-766	2.5	520	1300000	3/19/2003	13	13	0.00	0.00E+00
3/19/2003	Jerry Krane	PAM2205	002-574	2.5	498	1245000	3/20/2003	10	10	0.00	0.00E+00
3/19/2003	Lindsay Aschim	PAM2206	002-766	2.5	496	1240000	3/20/2003	12	10	0.07	1.36E-14 *
3/20/2003	Tim O'Brien	PAM2207	002-574	2.5	485	1212500	3/21/2003	13	13	0.00	0.00E+00
3/20/2003	Lindsay Aschim	PAM2208	002-766	2.5	210	525000	3/21/2003	11	13	0.00	0.00E+00
3/21/2003	Tim O'Brien	PAM2209	002-574	2.5	500	1250000	3/24/2003	11	11	0.00	0.00E+00
3/21/2003	Jerry Krane	PAM2210	006-234	2.5	503	1257500	3/24/2003	9	11	0.00	0.00E+00

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.

See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 24 March 17 - March 21, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
3/17/2003	Lindsay Aschim	PAM2201	002-766	2.5	425	1062500	3/21/2003	9	13	0.00	0.00E+00	0.00%
3/17/2003	Tim O'Brien	PAM2202	002-574	2.5	485	1212500	3/21/2003	12	13	0.00	0.00E+00	0.00%
3/19/2003	Lindsay Aschim	PAM2206	002-766	2.5	496	1240000	3/24/2003	10	11	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 25 March 24 - March 28, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
3/24/2003	Jerry Krane	PAM2211	006-234	2.5	551	1377500	3/25/2003	32	12	0.67	1.22E-13 *
3/24/2003	Odell Morgan	PAM2212	002-574	2.5	552	1380000	3/25/2003	27	12	0.50	9.14E-14 *
3/24/2003	Lindsay Aschim	PAM2213	002-766	2.5	550	1375000	3/25/2003	40	12	0.93	1.71E-13 *
3/25/2003	Lindsay Aschim	PAM2214	006-234	2.5	403	1007500	3/26/2003	18	13	0.17	4.17E-14 *
3/25/2003	Odell Morgan	PAM2215	002-766	2.5	515	1287500	3/26/2003	12	13	0.00	0.00E+00
3/25/1930	Tim O'Brien	PAM2216	002-574	2.5	516	1290000	3/26/2003	13	13	0.00	0.00E+00
3/26/2003	Odell Morgan	PAM2217	002-574	2.5	491	1227500	3/27/2003	14	11	0.10	2.06E-14 *
3/26/2003	Lindsay Aschim	PAM2218	002-766	2.5	493	1232500	3/27/2003	18	11	0.23	4.78E-14 *
3/26/2003	Jerry Krane	PAM2219	006-234	2.5	490	1225000	3/27/2003	17	11	0.20	4.12E-14 *
3/27/2003	Lindsay Aschim	PAM2220	006-234	2.5	527	1317500	3/28/2003	12	13	0.00	0.00E+00
3/27/2003	Tim O'Brien	PAM2221	002-766	2.5	529	1322500	3/28/2003	15	13	0.07	1.27E-14 *
3/27/2003	Armando Ruiz	PAM2222	002-574	2.5	526	1315000	3/28/2003	13	13	0.00	0.00E+00
3/28/2003	Tim O'Brien	PAM2223	002-574	2.5	463	1157500	3/31/2003	10	12	0.00	0.00E+00
3/28/2003	Lindsay Aschim	PAM2224	006-234	2.5	463	1157500	3/31/2003	12	12	0.00	0.00E+00
3/28/2003	Odell Morgan	PAM2225	002-766	2.5	496	1240000	3/31/2003	11	12	0.00	0.00E+00

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.

See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 25 March 24 - March 28, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
3/24/2003	Jerry Krane	PAM2211	006-234	2.5	551	1377500	3/28/2003	9	13	0.00	0.00E+00	0.00%
3/24/2003	Odell Morgan	PAM2212	002-574	2.5	552	1380000	3/28/2003	11	13	0.00	0.00E+00	0.00%
3/24/2003	Lindsay Aschim	PAM2213	002-766	2.5	550	1375000	3/28/2003	14	13	0.03	6.12E-15	1.22%
3/25/2003	Lindsay Aschim	PAM2214	006-234	2.5	403	1007500	3/31/2003	11	12	0.00	0.00E+00	0.00%
3/26/2003	Odell Morgan	PAM2217	002-574	2.5	491	1227500	3/31/2003	10	12	0.00	0.00E+00	0.00%
3/26/2003	Lindsay Aschim	PAM2218	002-766	2.5	493	1232500	3/31/2003	12	12	0.00	0.00E+00	0.00%
3/26/2003	Jerry Krane	PAM2219	006-234	2.5	490	1225000	3/31/2003	12	12	0.00	0.00E+00	0.00%
3/27/2003	Tim O'Brien	PAM2221	002-766	2.5	529	1322500	4/1/2003	10	12	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 26 March 31 - April 4, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
3/31/2003	Odell Morgan	PAM2226	002-574	2.5	547	1367500	4/1/2003	9	12	0.00	0.00E+00
3/31/2003	Tim O'Brien	PAM2227	002-766	2.5	385	962500	4/1/2003	12	12	0.00	0.00E+00
3/31/2003	Lindsay Aschim	PAM2228	006-234	2.5	552	1380000	4/1/2003	12	12	0.00	0.00E+00
4/1/2003	Tim O'Brien	PAM2229	002-574	2.5	493	1232500	4/2/2003	34	11	0.77	1.57E-13 *
4/1/2003	Lindsay Aschim	PAM2230	006-234	2.5	526	1315000	4/2/2003	23	11	0.40	7.68E-14 *
4/1/2003	Odell Morgan	PAM2231	002-766	2.5	525	1312500	4/2/2003	36	11	0.83	1.60E-13 *
4/2/2003	Jerry Krane	PAM2232	002-766	2.5	527	1317500	4/3/2003	15	10	0.17	3.19E-14 *
4/2/2003	Lindsay Aschim	PAM2233	006-234	2.5	527	1317500	4/3/2003	9	10	0.00	0.00E+00
4/2/2003	Odell Morgan	PAM2234	002-574	2.5	529	1322500	4/3/2003	10	10	0.00	0.00E+00
4/3/2003	Jerry Krane	PAM2235	002-766	2.5	508	1270000	4/4/2003	14	12	0.07	1.32E-14 *
4/3/2003	Odell Morgan	PAM2236	002-574	2.5	503	1257500	4/4/2003	11	12	0.00	0.00E+00
No Field Work on 4/4/03 - Rained Out											

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.

See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 26 March 31 - April 4, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
4/1/2003	Tim O'Brien	PAM2229	002-574	2.5	493	1232500	4/7/2003	10	12	0.00	0.00E+00	0.00%
4/1/2003	Lindsay Aschim	PAM2230	006-234	2.5	526	1315000	4/7/2003	13	12	0.03	6.40E-15	1.28%
4/1/2003	Odell Morgan	PAM2231	002-766	2.5	525	1312500	4/7/2003	11	12	0.00	0.00E+00	0.00%
4/2/2003	Jerry Krane	PAM2232	002-766	2.5	527	1317500	4/7/2003	12	12	0.00	0.00E+00	0.00%
4/3/2003	Jerry Krane	PAM2235	002-766	2.5	508	1270000	4/10/2003	13	13	0.00	0.00E+00	0.00%

* Note 4 day analysis of PAM2235 was not performed until 4/10/03 because we did not work on 4/8/03 or 4/9/03

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 26 March 31 - April 4, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
4/10/2003	Jerry Krane	PAM2237	006-234	2.5	370	925000	4/11/2003	9	11	0.00	0.00E+00
4/10/2003	Odell Morgan	PAM2238	002-766	2.5	555	1387500	4/11/2003	11	11	0.00	0.00E+00

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 27 April 7 - April 11, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
No 4 day analysis of PAM's required for this monitoring period												

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 28 June 16 - June 20, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
6/18/03	Odell Morgan	PAM2239	006-234	2.5	310	775000	6/19/03	15	12	0.10	3.28E-14
6/18/03	Glenn Huber	PAM2240	002-574	2.5	310	775000	6/19/03	12	12	0.00	0.00E+00
6/19/03	Joel Ahrweiler	PAM2241	006-234	2.5	422	1055000	6/20/03	10	11	0.00	0.00E+00
6/19/03	Odell Morgan	PAM2242	002-574	2.5	424	1060000	6/20/03	11	11	0.00	0.00E+00

Note: There has been no onsite excavation of soil since April 11, 2003. Radiation monitoring of construction activities started on June 16, 2003.

Wednesday 6/18/03 and Thursday 6/19/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 28 June 16 - June 20, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
6/18/03	Odell Morgan	PAM2239	006-234	2.5	310	775000	6/23/03	12	13	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = $5E-13$ uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = $1.5E-13$ uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 29 June 23 - June 27, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
6/26/03	Tim O'Brien	PAM2243	002-574	2.5	175	437500	6/27/03	11	11	0.00	0.00E+00
6/26/03	Odell Morgan	PAM2244	006-234	2.5	175	437500	6/27/03	10	11	0.00	0.00E+00
6/27/03	Odell Morgan	PAM2245	006-234	2.5	422	1055000	6/30/03	11	13	0.00	0.00E+00
6/27/03	Tim O'Brien	PAM2246	002-574	2.5	424	1060000	6/30/03	13	13	0.00	0.00E+00
<p>Thursday 6/26/03 and Friday 6/27/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days</p>											

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 29 June 23 - June 27, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
No 4 day analysis of PAM's required for this monitoring period												

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = $5E-13$ uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = $1.5E-13$ uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Week 30 June 30 - July 4, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/hr)
6/30/03	Odell Morgan	PAM2247	002-574	2.5	355	887500	7/1/03	10	12	0.00	0.00E+00
6/30/03	Tim O'Brien	PAM2248	006-234	2.5	355	887500	7/1/03	11	12	0.00	0.00E+00
7/1/03	Odell Morgan	PAM2249	006-234	2.5	290	725000	7/2/03	20	12	0.27	9.28E-14
7/1/03	Tim O'Brien	PAM2250	002-574	2.5	290	725000	7/2/03	14	12	0.07	2.32E-14
7/2/03	Odell Morgan	PAM2251	002-574	2.5	388	970000	7/3/03	13	13	0.00	0.00E+00
7/2/03	Tim O'Brien	PAM2252	006-234	2.5	388	970000	7/3/03	16	13	0.10	2.60E-14

Monday 6/30/03 through Wednesday 7/2/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.

See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Week 30 June 30 - July 4, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
7/1/03	Odell Morgan	PAM2249	006-234	2.5	290	725000	7/7/03	12	13	0.00	0.00E+00	0.00%
7/1/03	Tim O'Brien	PAM2250	002-574	2.5	290	725000	7/7/03	13	13	0.00	0.00E+00	0.00%
7/2/03	Tim O'Brien	PAM2252	006-234	2.5	388	970000	7/7/03	11	13	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

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07/14/03 MON 09:58 FAX 815 485 4433

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Report No. 31 August 18 - August 22, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
8/20/03	Glenn Huber	PAM2253	002-574	2.5	367	917500	8/21/03	11	13	0.00	0.00E+00
8/20/03	Odell Morgan	PAM2254	006-234	2.5	367	917500	8/21/03	13	13	0.00	0.00E+00
8/21/03	Glenn Huber	PAM2255	002-574	2.5	412	1030000	8/22/03	18	12	0.20	4.90E-14 *
8/21/03	Odell Morgan	PAM2256	006-234	2.5	412	1030000	8/22/03	14	12	0.07	1.63E-14 *
8/22/03	Glenn Huber	PAM2257	002-574	2.5	242	605000	8/25/03	12	12	0.00	0.00E+00
8/22/03	Odell Morgan	PAM2258	006-234	2.5	242	605000	8/25/03	12	12	0.00	0.00E+00

Wednesday 8/20/03 through Friday 8/22/03 were the only days during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Report No. 31 August 18 - August 22, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
8/21/03	Glenn Huber	PAM2255	002-574	2.5	412	1030000	8/26/03	12	13	0.00	0.00E+00	0.00%
8/21/03	Odell Morgan	PAM2258	008-234	2.5	412	1030000	8/26/03	10	13	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Report No. 32 August 25 - August 29, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
8/25/03	Glenn Huber	PAM2259	006-234	2.5	385	962500	8/26/03	22	13	0.30	7.87E-14*
8/25/03	Odell Morgan	PAM2280	002-574	2.5	385	962500	8/26/03	18	13	0.17	4.37E-14*
<p>Monday August 25, 2003 was the only day during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days.</p>											

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Report No. 32 August 25 - August 29, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
8/25/03	Glenn Huber	PAM2259	006-234	2.5	385	962500	8/29/03	11	11	0.00	0.00E+00	0.00%
8/25/03	Odell Morgan	PAM2260	002-574	2.5	385	962500	8/29/03	9	11	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Report No. 33 October 27 - October 31, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
10/29/03	Odell Morgan	PAM2261	002-574	2.5	384	960000	10/30/03	13	12	0.03	8.84E-15 *
10/29/03	Glenn Huber	PAM2262	006-234	2.5	384	960000	10/30/03	18	12	0.20	5.30E-14 *
10/30/03	Odell Morgan	PAM2263	002-574	2.5	365	912500	10/31/03	17	13	0.13	3.72E-14 *
10/30/03	Glenn Huber	PAM2264	006-234	2.5	365	912500	10/31/03	12	13	0.00	0.00E+00
10/31/03	Odell Morgan	PAM2265	002-574	2.5	395	987500	11/3/03	11	12	0.00	0.00E+00
10/31/03	Glenn Huber	PAM2266	006-234	2.5	395	987500	11/3/03	12	12	0.00	0.00E+00
<p>Monday August 25, 2003 was the only day during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days.</p>											

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Report No. 33 October 27 - October 31, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
10/29/03	Odell Morgan	PAM2261	006-234	2.5	384	960000	11/3/03	12	12	0.00	0.00E+00	0.00%
10/29/03	Glenn Huber	PAM2262	002-574	2.5	384	960000	11/3/03	10	12	0.00	0.00E+00	0.00%
10/30/03	Odell Morgan	PAM2263	002-574	2.5	365	912500	11/4/03	10	11	0.00	0.00E+00	0.00%

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = 5E-13uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = 1.5E-13 uCi/ml

Personal Air Monitoring Summary Sheet (PAM's -Daily Analysis)

Report No. 34 November 3 - November 7, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

*** All PAM's with elevated counts on day after analysis are recounted after 4 days (see attached)

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)
11/7/03	Glenn Huber	PAM2267	006-234	2.5	380	950000	11/10/03	11	13	0.00	0.00E+00
11/7/03	Odell Morgan	PAM2268	002-574	2.5	380	950000	11/10/03	13	13	0.00	0.00E+00
Friday November 7, 2003 was the only day during this week when thorium contaminated material was excavated and loaded. Air Monitoring not required on other work days.											

Note: Official airborne Th-232 concentrations are obtained from 4 Day Analysis.
See attached 4 Day Analysis Form for Occupational Dose Limit Information.

Personal Air Monitoring Summary Sheet (PAM's -4 Day Analysis)

Report No. 34 November 3 - November 7, 2003

Lakeshore East Project - 221 North Columbus Drive, Chicago, IL

***Note: All samples on this page were analyzed after 4 days to allow for thorium daughter decay

Date Collected	Name	Sample ID	PAM #	Flow Rate (lpm)	Total Time Sampled	Total Sample Volume (ml)	Analysis Date	Gross Counts (30 min)	Bkg Counts (30 min)	Net CPM	Sample Concentration (uCi/ml)	% of DAC
No 4 day analysis of PAM's required for this monitoring period												

Occupational Dose Limit for Occupational Radiation Exposure = 5 rem Total Effective Dose Equivalent

2000 DAC-Hours = 5 rem

DAC (Derived Air Concentration) for Th-232 = $5E-13$ uCi/ml

Administrative Site Limit for Occupational Exposure = 30% Th-232 DAC = $1.5E-13$ uCi/ml



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APPENDIX F

Equipment Release Survey Results

RADIATION SURVEY FORM

Lakeshore East Project

SURVEY REFERENCE #: 003

DATE OF SURVEY: 4/10/03

NAME OF SURVEYOR: Joel Albrecht

SURVEY METER IDENTIFICATION:

Mfg: Ludlum

Background Reading: 0.02 mR/hr

Model: 114750

Serial: 145

INSTRUMENT ID:

Mfg: Ludlum

Background Reading: 0.4 cpm

Model: 2200 (scaler) / 43-10 (alpha)

Efficiency: 557 %

Serial: 102770/PR113195-

MDA: 8.71 dpm

[illegible]

RADIATION SURVEY FORM**Lakeshore East Project**

SURVEY REFERENCE #: 004

DATE OF SURVEY: 4/15/03

NAME OF SURVEYOR: Jerry Krueg

SURVEY METER IDENTIFICATION:

Background Reading: 0.02 mR/hr

Mfg: Ludlum

Model: N/A

Serial: N/A

Gamm meter on
loan from Ken McGeer
in West Chicago
(ProSource Technologies)

INSTRUMENT ID:

Mfg: Ludlum

Background Reading: 0.4 cpm

Model: 2200 (scaler) / 43-10 (alpha)

Efficiency: 35%

Serial: 102770 / PR 113195

MDA: 8.71 dpm

Description (attached sketch if needed) (Area, equipment, vehicle, materials, etc.)	Item #	Gross mR/hr	Gross cpm	dpm per 100 sq. cm
Redon bucket which was moved to equipment yard in West Chicago 4/10 on Henderson. Note: Wipes obtained after small part of surface contamination was decontaminated.				
Left hand		0.02	1	1.68
Right hand		0.02	0	0
outside bucket		0.02	1	1.68
inside bucket		0.02	2	3.36
Survey results per Jerry Krueg form filled out by Anttaka wipes analyzed in OAKC field Lab @ Lakeshore East.				

Lakeshore East Project

Serial: 102770 / PR 113195

[illegible]

Lakeshore East Project

Serial: 102770 / PR 113195

[illegible]



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APPENDIX G

Film Badge Results

STAN A HUBER CON INC
ATTN STAN HUBER
200 N CEDAR ROAD
NEW LENOX IL 60451

LANLAUER®
Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (708)755-7000 Facsimile: (708)755-7016
www.landauerinc.com



RADIATION DOSIMETRY REPORT

ACCOUNT NO.	SERIES CODE	ANALYTICAL WORK ORDER	REPORT DATE	DOSIMETER RECEIVED	REPORT TIME IN WORK DAYS	PAGE NO.
67627	NL1	0310830251	04/24/03	04/18/03	4	1 OF 1

PARTICIPANT NUMBER	NAME			DOSIMETER	USE	RADIATION QUALITY	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW			QUARTERLY ACCUMULATED DOSE EQUIVALENT (MREM)			YEAR TO DATE DOSE EQUIVALENT (MREM)			LIFETIME DOSE EQUIVALENT (MREM)			RECORDS FOR YEAR	INCEPTION DATE (MM/YY)
	ID NUMBER	BIRTH DATE	SEX				DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE		
NL1	CONTROL			P	CNTRL		M	M	M										4	10/78
134	VISITOR			P	WHBODY		M	M	M	M	M	M	M	M	M	2	2	3	3	12/00
135	VISITOR			P	WHBODY		M	M	M	M	M	M	M	M	M	2	2	3	3	12/00
137	VISITOR			P	WHBODY		M	M	M	6	6	6	6	6	6	11	10	11	3	12/00
139	VISITOR			P	WHBODY		M	M	M	M	M	M	M	M	M	18	20	22	3	12/00
141	VISITOR			P	WHBODY		M	M	M	M	M	M	M	M	M	M	M	M	3	12/00
147	VISITOR			P	WHBODY		M	M	M	M	M	M	M	M	M	M	M	M	3	10/01
149	VISITOR			P	WHBODY		M	M	M	M	M	M	M	M	M	13	13	13	3	10/01
151	VISITOR			P	CHEST NOTE		UNUSED									M	M	M	3	10/01

MINIMAL REPORTING SERVICE OF 1 MREM

QUALITY CONTROL RELEASE: DRB

1 - PR 7717 - RPT130 - N1

- 10851

Accredited by the National Institute of Standards and Technology through



IL
60451

Facsimile: (708) 765-7016

DO NOT RETURN CHANGE REQUESTS WITH YOUR DOMESTIC SINCE THIS DELAYS HANDLING.

STANDARD HOLDERS	SPECIAL HOLDERS
8	8

**USE REVERSE SIDE FOR
ADDITIONS AND OTHER
CHANGES**

ACCT. NO.	SERIES	EXPOSURE PERIOD	BADGE DATE
67627	NL1	1 MONTH M	03-01-03

SERIES NAME

NL1

SERVICE CHANGE ORDER

S3404103853 34

LEAVE (D)	CHANGE SERIES FROM	TO	PARTICIPANT NUMBER	BADGE TYPE	NAME - MAXIMUM OF 34 LETTERS & SPACES	ID NUMBER	SERIAL NUMBER	SEX	BIRTH DATE MO DAY YEAR
			00NL1	P1	CONTROL		4213461D		
			00134	P1	VISITOR <i>Glen Hyber</i> ✓		4213462D		
			00135	P1	VISITOR <i>Tom O'Brien</i> ✓		4213463D		
			00136	P1	VISITOR <i>Jimmy Kruse</i> ✓		4213464D		
			00137	P1	VISITOR <i>Andrew Asch</i> ✓		4213465D		

S3404183953

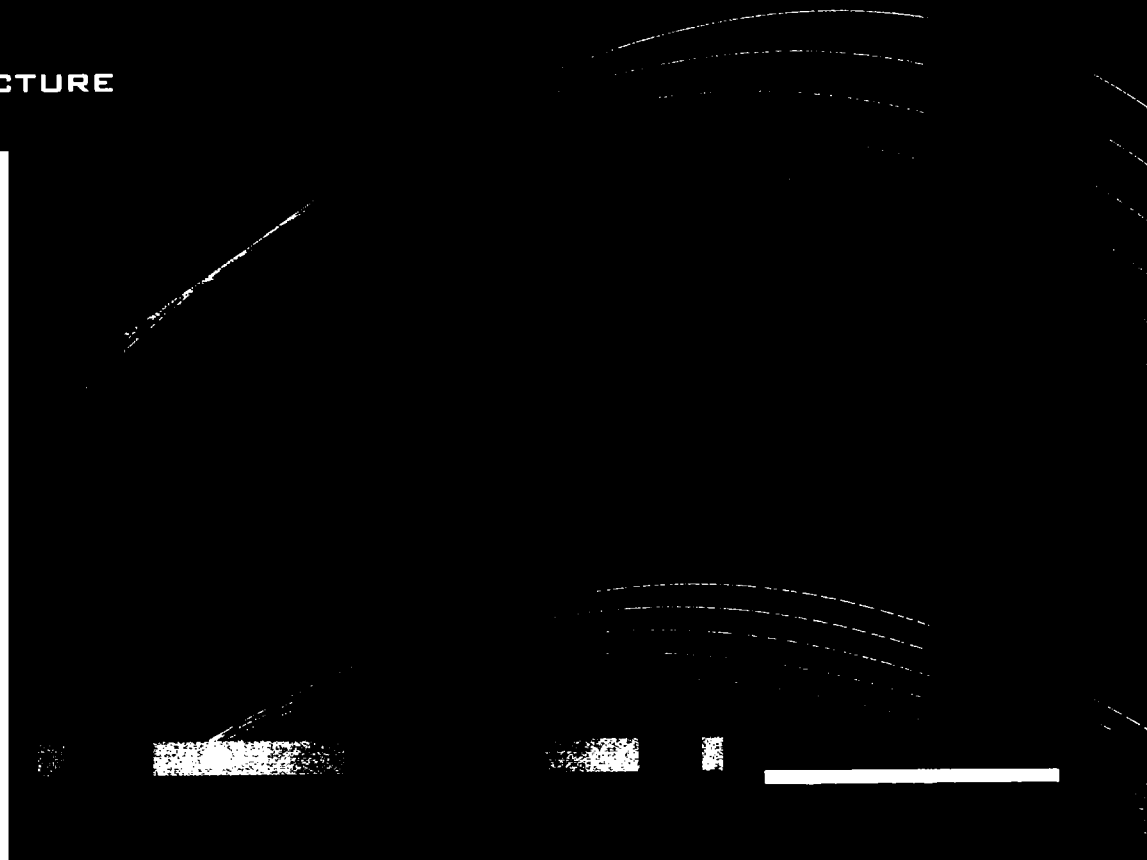
67627 NL1

34

[illegible]



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APPENDIX H

Shipping Manifests

WILL BE PROVIDED ON CD FOR FINAL